THREE ESSAYS ON UNITED STATES TRADE UNIONS

by

Behroz Baraghoshi

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STATEMENT OF DISSERTATION APPROVAL

The dissertation of **Behroz Baraghoshi**

has been approved by the following supervisory committee members:

Cihan Bilginsoy	, Chair	**06/22/2011** Date Approved
Thomas Maloney	, Member	**06/22/2011** Date Approved
Richard Fowles	, Member	**06/22/2011** Date Approved
Korkut Erturk	, Member	**06/22/2011** Date Approved
Michael Timberlake	, Member	**06/22/2011** Date Approved

and by **Thomas Maloney**, Chair of the Department of **Economics**

and by Charles A. Wight, Dean of The Graduate School.

ABSTRACT

This dissertation encompasses three related essays on US trade unions.

Chapter 1 investigates union density differences across states and state-industry in the private sector. In the US, private sector union density varied sharply geographically. This essay examines the factors that contributed to the decline in unionization by exploiting variations at the state and state-industry level. It updates the literature that focused on the pre-1980 period, develops three new measures to gauge the effects of union activism and management opposition on unionization, and uses Oaxaca-Blinder decomposition to identify the major contributors to declining unionization rates. Ordinary Least Squares and Two-Stage Least Squares estimations are carried out for 1985, 1995, and 2005. State-industry estimation results show that union density varied directly with earnings, share of blue-collar workers, union activism, and urbanization rate, and inversely with female share, employer opposition, and Right-to-Work laws. Overall, our model confirms the findings of the previous studies and it verifies our choice of proxies for employer opposition and union activism.

Chapter 2 investigates union density differences between Colorado and Utah in the public sector. Colorado and Utah experienced very different histories of change in union density during 1983-2008, despite their substantial similarities with respect to the determinants of unionization. This essay took a comparative analysis approach, because some of the phenomena that affect unionization are the state-specific characteristics and

are hard to quantify. The decline in public sector union density in Utah was due to changes in public attitudes, which led to a super majority control of government by the Republican Party and management's resistance towards unions.

Chapter 3 investigates the National Labor Relations Board member's voting behavior on Unfair Labor Practice cases. Empirical studies show that the board members of the Democratic Party are more likely to vote pro-union and members of the Republican Party are more inclined to vote promanagement. This chapter utilized logistic regression and estimated factors that influence board members' voting behavior during the 1993-2008 period. Our results confirm the findings of previous studies on board members' voting behavior and, furthermore, they show that a newly introduced board member's background variable has an immense impact on a board member's voting behavior.

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INTRODUCTION

Trade unions in the United States (US) have experienced large fluctuations in their membership rates. Kaufman and Hotchkiss (2006) identified three periods that separate the ups and downs of union density for the past 80 years. The first period marks the beginning of the Great Depression and ends in the early 1950s (1930-1954). This period experienced union density of slightly over 13 percent in 1935 to a high of 36 percent by 1945, declining slightly through 1954 (34.9 percent). The union density decline accelerated during the second period (1955-1980). In this period, union density declined relative to the labor force, however, union membership was still climbing. In the third period, union density experienced its worst decline in history. Beginning in 1981 through the present time, union density has declined relative to the labor force, and turned into an absolute decline in union memberships. In 2008, union density stood at 12.4 percent, which is comparable to levels prior to the 1930s and less than the level in 1935. Variations in union density are not limited to time, but also exist among states and across industries. States and industries not only saw their union membership rates fluctuate over time, but there also existed huge differences between the states and industry unionization. For instance, in 2008, North Carolina's union density stood at 3.5 percent and New York at 24.9 percent or nearly seven times larger than union density in North Carolina (Hirsch and Mcpherson, 2009). In the public sector, union density experienced a very different history than the private sector. At the time when the private sector union membership rate

was thriving, there was little or no public sector unionization. When union density in the private sector was dropping in the 1960s and 1970s, public sector union density was flourishing and surpassing the levels of private sector unionization. In 2008, public sector union density stood at 37 percent, which was nearly three times that of private sector unionization.

Union membership rate is an indication of a union's strength vis-a-vis employers and affects labor-management relations in the labor market. In the period of 1980-2008, unions lost much of their strength and members due to the factors that have been the subject of many studies in the field of social sciences including economics. Economists are interested in union density for the following reasons. First, unions raise wages in the unionized firms in comparison to the nonunionized firms. Employers in the unionized firms complained that they could not compete with the low cost nonunion firms and opposed the union's organizing drives, which led to unfair labor practices during organizing drives. Second, profits in the unionized firms were lower than in the nonunion firms, which gave employers yet another reason to oppose the unions organizing activities. Third, on a positive note, unions reduce worker turnover and make management more efficient by voicing worker's concerns with workplace conditions and management treatment, which leads to higher productivity in unionized firms. However, restricted job descriptions by unions lower the productivity. Unionized workers are more informed about the health of the company that they work for and anticipate more in the firm's day- to-day operations. Finally, unions reduce the wage-gap in unionized firms and redistribute the income more evenly within the unionized firms. These and related issues affect the outcome in the labor market and have led economists to examine causes and

consequences of unions in the labor market. Freeman and Medoff (1984) stated that "unionization appears to improve rather than to harm the social and economic system."

This dissertation was inspired by these fluctuations and variations in union density over time and across states and industries. Although the three periods that were mentioned above offer different histories in unionization and previous studies have to some extent examined them, this dissertation limits its study to the period of 1980-2008. This period not only represents the worst decline in union membership rate, but also has some unique aspects. For instance, in this period, labor-management relations became more antagonistic than the prior three decades. The 1950s, 1960s, and the early 1970s were a period of cooperation between labor and management, which started to falter in the late 1970s. In the late 1970s a series of events led to a filibuster of a labor law bill by then junior Senator Orrin Hatch (R-Utah). Labor unions realized that an update to the old labor laws that passed Congress in 1935 and were amended in 1947 was needed to combat employer opposition and thought that the old laws did not correctly reflect labor-management relations four decades later. The filibuster of that bill by the Republicans was the beginning of more conflicts between labor and management. The election of President Reagan in 1980 and his subsequent firing of the striking air traffic controllers in 1981 was the second strike by management on labor within a short period of 3 years. Furthermore, growing employer opposition to unions and their organizations due to intense competition from in and outside the country led to firing, demoting, and relocating union activists, which intensified in the late 1970s. This period also experienced a resurgence of the Republican Party in the political scene and a polarization between the Senate and the executive branch in matters related to unions.

This dissertation is composed of three essays on US trade unions that are interrelated. It aims to examine fluctuations and variations in union density over time and across state and industry, respectively. The first and second essays explore private and public sector unionization, their variations, and their decline in the period mentioned above. The first essay is an empirical analysis of the variations and the decline of union density in the private sector, which experienced the worst decline during this period. The second essay is a qualitative comparison of two neighboring states' public sector unionization. These two states are very similar in many respects including the determinants of unionization; however, they experienced very different changes in their public sector union density in that period. The third essay studies the voting behavior of the National Labor Relations Board (NLRB) on Unfair Labor Practice (ULP) cases for the period of 1993-2008. The NLRB is the body in charge of administering the National Labor Relations Act (NLRA) of 1935, which gives collective bargaining legal protection. Unions have long complained that the NLRB process is slow and negatively impacts a union organizing effort and have tried to pass bills through Congress to update the NLRA. Unions claim that the organizing election process adversely affects unionization and gives management incentive to derail the organizing drive, hence reducing union density.

Previous empirical studies of union density in the private sector, which is the subject of the first essay, focused on the Right-To-Work laws and their effects on union membership rates. Studies of union density across states and over time are few and they differ in their choice of the determinants of unionization and their periods of study. We identified three studies that are closely related to the first essay; however, they employed

data from pre-1980. These studies and their findings are discussed in the introduction of the first essay. Essay two is a qualitative study and is unique in its examination of the public sector in two Intermountain states. Most of the public sector studies are empirical in nature and may not capture some specific characteristics of a state. This essay employed determinants of union density in the public sector from the empirical studies for comparison in addition to some specific issues related to these states. The third essay is an empirical study of voting behavior of the NLRB on ULP cases. It will expand on three previous studies, whose data came from pre-1980. A change in the process of nominations to the NLRB since 1980 inspired the third essay. The following paragraphs will describe in more detail the nature and the goals of all three essays.

Essay one aims to study union density, its decline, and its variations across states and state-industry in the private sector. Private sector union density has been a measured source of the decline in unionization in the US since the early 1950s. Most of the literature focused on the Right-To-Work (RTW) laws and their effects on union density in the private as well as public sectors. Related literature to this essay utilized data from the 1970s and did not cover the changes that the US labor market experienced after that time. This essay hypothesizes that those changes in labor management relations since 1980 have profoundly affected unionization in the US. Accordingly, it uses data from the 1985, 1995, and 2005 Current Population Survey (CPS) to examine determinants of union density across state and state-industry. In addition, it introduces new variables to measure some of these changes that are related to employer opposition and union activism. The related literature has tried different proxies for these determinants and arrived at different conclusions. We believe our new measures are reflective of these

determinants of union density and expect to have significant effects on unionization in the private sector. We expect employer opposition to be negatively related to union density at state and state-industry levels. We expect that union activism significantly impacts union density in the private sector with a positive sign for its coefficient. Furthermore, this essay uses the Oaxaca-Blinder decomposition method to account for the differences in union density over time. This method will allow us to decompose union density into two parts. The first part shows the impact of the characteristics (explained portion) on union density over time. The second part delineates the impact of the coefficient (unexplained portion) over time. In addition, we subdivide the decomposition into three parts (1985-1995, 1995-2005, and 1985-2005) to capture the effects of the determinants in different decades. Finally, it uses state-industry level union density for the first time to enrich the number of observations and to capture the effects of the determinants of unionization at the state-industry levels and compare them to the state level observations.

Essay two aims to understand variations in public sector unionization; specifically, it compares two neighboring states, Colorado and Utah. The public and the private sectors are different in their industrial relations and operate under a different set of laws. For instance, state laws differ from interstate laws that govern private sector unionization. According to Freeman (1986), the public sector operates under different market conditions, management-employee relations, and labor force. Except for federal employees, state and local government employee unions operate under state collective bargaining laws, or lack thereof. This makes the study of public sector union density different in part from the private sector. In addition, state-specific characteristics can

greatly influence public sector unionization. Colorado and Utah have a different union density history in their public sectors, despite their many similarities including the determinants of unionization in the public sector. This chapter aims to understand Colorado and Utah's public sector union density history by looking into past events, which may have led to different outcomes of unionization at the end of this period. This includes events such as the Civil Rights Movement of the 1960s, the Equal Rights Act of the 1970s, and the resurgence of the Republican Party in the 1980s. This paper is unique because it is the first study of public sector unionization between Colorado and Utah. In addition, the time period in which this study is focused offers rich historical changes in public sector unionization in these two neighboring states.

Essay three focuses on NLRB voting behavior on ULP cases during the Clinton and Bush Administrations. Although it is not a direct measure of private sector union density, it is related to unions' organizing drives and employer reactions during organizing drives and collective bargaining in the private sector. The NLRB oversees unions organizing elections and responds to ULP charges. The board has been the center of criticism for their partiality throughout their existence. A number of issues made the board susceptible to these criticisms by unions and employers alike. The issues that make the board vulnerable to critics are the unclear language of the laws, conflicting intent by law makers, and interpretation problems of the NLRA by the board members. In addition, the laws passed by the US Congress in 1935 are outdated and do not reflect today's labor market and labor-management relations. This essay aims to understand the determinants of voting behavior of the board members for a period that has not been covered by other empirical studies. Previous empirical studies utilized data from the 1950s, 1960s, and

1970s and concluded that board member's political party affiliation and the party of the residing president who nominates the board members are related to voting behavior of the NLRB members, in addition to some economic and public accountability factors. A body of qualitative evidence, however, shows that some changes in the process of nomination and confirmation of the board members may have influenced voting behavior of the board after 1980. A change in the role of the US Senate from a body which until 1980 was charged with the confirmation process, to intervention in the nomination process that was the sole responsibility of the president until that time, is the root cause of the changes in the board's voting behavior on ULP cases. This essay aims to study the changes in the voting behavior of the NLRB by incorporating new variables to capture the changes since the 1980s, in addition to other known determinants of board member's voting behavior.

CHAPTER 1

INTERSTATE AND INDUSTRY VARIATIONS IN PRIVATE SECTOR UNION DENSITY IN THE US

Introduction

The decline in union membership in the United States (US) private sector over the past three decades, its causes, and consequences has attracted much attention in economic literature. Variations in union density at the state and industry levels and their evolution over time have been examined to a lesser extent, and much of the literature has focused on the impact of the Right-To-Work (RTW) laws on unionization. Hirsch (1980) and Moore and Newman (1988) examined the relationship between union density and an array of variables at the inter- Standard Metropolitan Statistical Area (SMSA) and inter-state levels, respectively. The data for Hirsch's study came from the early 1970s. Moore and Newman used data from the 1950s to 1980s. The latest data used by studies that focus on the impact of the Right-To-Work laws are from 2000.

The dramatic decline in US union density since the 1950s and the important role of the labor unions in society led to a series of debates among social scientists, unions, and businesses. According to Freeman and Medoff (1984), some economists, social scientists, and business managers perceive unions as harmful. This group points out that unions raise wages for their members at the expense of nonunion workers, hence leading to higher unemployment and a crowding out of the nonunion sector. Management

complains that unions create rigid operations and work disruption. Social critics describe unions as nondemocratic and socially unresponsive institutions. However, industrial relations experts believe that unions can increase workers' human capital, keep them informed about their work place, and pressure management to be more efficient in its operation. Freeman and Medoff concluded that "unionization appears to improve rather than to harm the social and economic system" (p. 11). The strength of unions is closely correlated with the level of unionization. The level of trade union membership determines the extent of action a trade union enjoys, the union's capability for financial and organizational survival, the ability to influence employers, and the ability to be heard by the general public (Riley, 1997). What determines the level of union membership? Why does union density vary across space and over time? Did the same determinants of union density have the same impacts on membership rates in 1985 as in 2005?

This paper revisits unionization in the private sector across states and over time for three years each a decade apart, 1985, 1995, and 2005. Similar to Hirsch (1980) and Moore and Newman (1988), it will explore the relationship between a set of region-level variables and union density, and similar to Moore and Newman (1988) it will utilize decomposition analysis to gauge individual effects of changing state-level endowments and returns to these attributes on union density. Its contributions to the literature are three-fold. First, it uses data over 1985-2005, a period during which there were major transformations in industrial relations, and which is not covered in the earlier studies. Second, it will carry out the analysis both at the state and state-industry levels. Previous studies did not perform the second level of analysis and therefore did not exploit rich variation at the industry level. Third, we introduce several new variables to capture the

tug of war between union and management in promoting and discouraging unionization efforts.

Literature Review

Empirical studies of determinants of union membership are built upon the economic model of supply and demand for union membership (Ashenfelter and Pencavel, 1969; Hirsch, 1980; Moore and Newman, 1985; Waters et al., 1994; and Davis and Huston, 1995). The theory of supply and demand for union services, and determinants of each, are discussed in more detail under the Theoretical Framework section later in this chapter.

Among studies of the determinants of union density, Hirsch (1980), Moore and Newman (1988), and Hogler et al. (2004) are of the greatest interest for our purposes because they share three commonalities with the present essay. First, each uses aggregate regional-level data as the unit of observation. Second, each uses similar estimation methodologies. Third, they use similar specifications in exploring the determinants of unionization.

Hirsch (1980) estimated union density at the SMSA level using the 1973-75 Current Population Survey data. He modeled demand for union membership as a function of income level, tastes or preferences, and relative attractiveness of the price of alternatives. The supply of unionization, in turn, depended on organizing costs and the costs of providing union services. On the demand side, specific variables were earnings level, and labor force characteristics that included occupation, gender, race, age, and labor force composition. The average earnings level is expected to be positively related to

demand for unionization, on the presumption that union services are a normal good.[1] In addition to earnings level, Hirsh also considered adding union wage gap as a variable that would directly affect union density, but omitted it due to lack of data. Among the labor-force characteristics, the proportion of white-collar workers in the labor force is expected to be negatively related to union density because white-collar workers are less likely to be unionized. Similarly, the share of female workers is hypothesized to be negatively related to union density. The impact of non-White workers on unionization is ambiguous due to two opposing factors, hence no sign was assigned for this variable. Average age is another determinant of union density, but the net results for this variable on unionization may be negligible due to union rules and the benefits of unionization. On the supply side, specific variables that affect the costs of organizing and providing union services are employers and employees' attitudes, industrial structure, and composition of the labor force. Hirsch used nine census regions to capture employers and workers attitudes, as well as regional differences in the labor-force and industry characteristics. For example, southern states were perceived to be hostile towards unions resulting in higher organizing costs and industries (measured by share of employment) that operate in concentrated markets are believed to be less costly to organize. The share of women in the labor force is expected to be negatively related to union density because women are more costly to organize. Finally, RTW states, which prohibit union security clauses, are expected to have less union membership due to the increase in costs to supply union services.

Hirsch used these supply and demand functions to derive a reduced form equation for union density and utilized both Ordinary Least Squares (OLS) and 2 Stage Least

[1] One well-known problem related to the relationship between the two variables is the simultaneity problem since a higher rate of unionization may also result in higher earnings due to collective bargaining, Hirsch and other scholars determine unionization and earnings simultaneously.

Squares (2SLS) (in view of the simultaneity problem between union density and earnings) techniques to estimate the impact of explanatory variables on union density. His OLS regressions contained three separate estimations. One regression includes all independent variables. Another excludes all industries and the third regression estimates industries only. He found that unionization increases as earning levels increase. The share of white-collar workers negatively affected union density. RTW laws reduce union density; however, they do not affect union coverage rates. Industry effects varied with model specification and often were not in line with the author's expectations. Hirsch's explanation for these unexpected results is as follows. He stated that it is possible that the interindustry variations are due to personal characteristics, regions, occupations, and earnings rather than differences from market structure and capital intensity. However, he called for a further study in the relationship between industry and unionization. Race, sex, and regional differences had a lesser impact on interarea variations in union density. Although Hirsch's study provides valuable information on unionization across metropolitan areas, the information is limited to a point in time and does not capture whether the observed relationships change over time.

Similarly, Moore and Newman (1988) used a reduced form equation to estimate union density at the state level, but they carried out estimations at different points in time to account for the evolution of the estimated effects over time. Their analysis attempts to distinguish between four sets of factors that relate to the hypotheses proposed to explain union density decline: structure and composition of the labor force, management opposition, changes in public policy, and union organizing activity. Variations in the structure and composition of the labor force factors are measured in terms of gender,

race, age, region, industry, occupation, and urbanization. The percentage of the population living in an urban area was expected to have a positive effect on union membership. Instead of Hirsch's nine census regions as a measure of employer and employee attitudes towards unions, Moore and Newman used the south region as a proxy for taste, which was expected to have a negative impact on unionization due to hostile southern attitudes towards unions. They also measured industry in a different setting than Hirsch's study, whereby they aggregated goods-producing industries -- mining, construction, manufacturing, and transportation. This variable is expected to impact union membership positively due to these industry's history of high rates of unionization. The management opposition hypothesis implies that management opposition towards unions will result in lower union membership. This is operationalized in terms of the reported number of unfair labor practice (ULP) cases by management, relative to the number of eligible voters in the representation election in each state. This proxy is a more direct measurement of employer opposition to unionization and differs from Hirsch's overall attitudes (employers and employees). Management opposition would raise the costs of organizing and reduce the demand for union services; therefore, a negative sign was expected. Changes in public policy include RTW laws and the government subsitution of union services hypothesis (welfare expenditure and unemployment compensation). RTW laws can impact unionization negatively by raising the costs of organizing due to free rider problems and reducing the demand for union membership by weakening a union's bargaining power. Government social welfare programs such as welfare expenditure and unemployment compensation were also expected to have a negative impact on unionization to the extent that such services were normally provided

by unions. Finally, the authors also considered the impact of union organizing activities as a determinant of unionization, but did not develop any proxy to measure this effect and left it outside their analysis.

Moore and Newman utilized the OLS regression model to estimate unionization at the state level for 1950, 1960, 1970, and 1980. They also ran a pooled regression to capture the 1950-1980 over time average impact. Finally, they employed Farber and Blinder decomposition methods to account for the individual effects of endowments and estimated the coefficients of explanatory variables on union density between 1950 and 1980. They found that most of the postwar decline in union density was due to structural shifts in employment patterns. Negative contributors to the decline in unionization over the 30 year period were increases in women and young people's shares in the labor force, and the decline in blue-collar jobs. Offsetting these negative elements over the same period was an increase in firm size and urbanization of the population. With respect to public policy, they found RTW laws had a negative impact on the extent of unionization. They treated RTW as an exogenous variable and they cautioned that their results for this variable might overstate the impact of RTW laws due to bidirectional relationships between union density and RTW laws. They did not find any support for government substitution hypothesis with the exception of unemployment compensation. Employer opposition measured by unfair labor practices had no significant effect on unionization in their study. Their study was a step forward in comparison with a single period cross-sectional study because it introduced the time element in the model. However, their study periods ended in 1980, which does not capture the changes in the labor market during the

past three decades. There are also problems with their decomposition methodology, which we will address later in the empirical section of this essay.

Hogler et al. (2004) studied determinants of unionization in the lower 48 states with an emphasis on state labor policy. They added two variables to the determinants of union density, which were not included in the previous two studies we examined in this paper. Five factors are believed to influence the levels of union density at the state level. Employer opposition, legal environment (RTW laws), and labor market and worker's characteristics were among the determinants that we mentioned above. The social context of union organizing and political ideology in the state are the new additions. The social context of union organizing is a variable that measures union activism, which was mentioned in Moore and Newman but was not included in their empirical model due to a lack of data. Hogler et al. included an index of 14 variables that measured the social context of union activism. The index includes factors such as attendance at town or school board meetings and voting behavior in presidential elections. It was assumed that a higher level of the electorates showing up for presidential elections was correlated with higher union activities and was expected to be positively related to union density. Political ideology measures the attitude of the population towards unions. It was measured by votes for Democrats in the 2000 presidential elections in a state and was expected to be a positive sign. They ran several regressions using OLS and 2SLS. In their final model, the authors found that union density across states was negatively affected by employer opposition, RTW laws, and one of the 14 variables from the capital index (meeting), and positively affected by political ideology (vote for Democrats), and the

percentage of the electorate who voted in presidential elections in 1988 and 1992. Their final model explains 78 percent of the variations in union density across states.

Studies of determination of union density vary in their choice of units of observations and specification. Some studies focused on the effects of RTW laws on the extent of union density (Elwood and Fine, 1978; Moore and Newman, 1985; Davis and Huston, 1995). For example, Elwood and Fine used the state level as their unit of observation, whereas Davis and Huston used individuals as their unit of observation. Both studies focused on the effect of RTW laws on union density and both found that RTW laws have negative effects on union density. Freeman and Kleiner (1990) focused on employer oppositions to union organizing drives at the firm level by using surveys in two different states in 1986. They found management opposition was an important determinant of the union decline. Bronfenbrenner (1997) focused on how unions can improve their organizing efforts and increase their union membership rate. She stated that a union's strategy has an important impact on the outcome of organizing drives.

Although studies on unionization vary in their choice of units of observations (individual, state, firm) and their focus with respect to specific determinants (RTW laws, employer opposition, union activism) of union density, they all employ many of the variables that we mentioned above. Management opposition to organized labor and organizing activities by the unions are part of our focus in this paper. Many studies agree that employer opposition towards unions is a major factor in union decline (Freeman and Medoff, 1984: Kleiner, 1990). Freeman and Medoff emphasized that employer opposition to unionization was the greatest obstacle to unionization efforts and an individual's decision to join unions. Kate Bronfenbrenner studied union organizing

strategies in the private and public sectors and concluded that a union's strategies play a big role in elections outcomes. According to Fiorito et al. (1995), unions are not helpless victims of their environments and can help to determine their own fates. However, measurement of employer and union behavior and estimating their effects on union density are fraught with difficulties because there are no easily observable and commonly agreed upon metrics in terms of which employers and union actions can be assessed. Moore and Newman (1988) did not include union organizing activites, because they did not developed any proxy for it. Hogler et al. (2004) used a social capital index as proxy for union activities, which included 14 components of social activities in a state. Hirsch (1980) used census regions to capture, among other things, the employer's attitude towards unions. Moore and Newman (1988) and Hogler et al. (2004) used unfair labor practice cases to measure employer opposition; however, the first study divided this number by eligible voters and the second divided the number of election petitions by unfair labor practice cases. Interpretations of these variables are ambiguous; although related to the intended variables they measure different effects. In the case of management opposition, Hogler et al. (2004) deflate numbers of election petitions by number of ULP cases and Moore and Newman (1988) deflate the number of ULP cases by the number of eligible voters.

Another issue that is not sufficiently addressed in the literature, except for Moore and Newman (1988), is that each period may be unique and some determinants may have different impacts on unionization in one period more than another period due to the dynamic nature of the labor force structure and characteristics. In this paper, we contribute to the literature first by developing new measures of employer opposition and

union activism, and estimate their effect on union density, and second by applying the empirical model across three more recent periods, each a decade apart, so that we do not only update the existing studies but also capture changes over time.

Variations in Union Density by State and Industry: 1985-2005

Private sector unionization rates in the 1950s reached their highest level of 35 percent, before starting a steady decline. Up until the late 1970s, union membership had experienced a relative decline with respect to the labor force; however, this had changed into an absolute decline since the beginning of the 1980s. The magnitude of the decline varied among the states. Some states on average experienced a higher percentage decline than others.

Table 1 provides descriptive statistics for private sector union density by states for 1985, 1995, and 2005. These three years were chosen for the following reasons. First, the Current Population Survey (CPS) Outgoing Rotation Extracts that provide information on union membership are available since 1983. Definitions of some of the explanatory variables in our model, such as employer opposition and union activism, require lags up to 3 years; therefore, we started with 1985. Second, the 10-year intervals allow us to examine the changes in union density and their determinants over time. Third, existing studies used older data and our data are more recent and up-to-date. Table 1 shows that the average union density across states declined 46 percent between 1985 and 2005 from 13.18 to 7.08 percent. However, this decline was not even across all states. Union density declined on average 55 percent in states with lower than average unionization and 43 percent in states with higher than average unionization.

Table 1 tells only part of the story. Changing distribution of union membership can be observed across states and over time in the kernel function (Figures 1 and 2). Union density has transformed from a bimodal distribution in 1985 to an increasingly skewed distribution over the years. This distribution became increasingly asymmetric with a measured skewness of 0.18 in 1985, 0.37 in 1995, and 0.68 in 2005. This information suggests that across-state distribution of union density in the private sector in 1985 consisted of two bifurcated distinct groups, one with higher union density and the other with lower union density. Over the years, however, this distribution changed, not only with the across-the-board decline in union density but also with the migration of highly unionized states to the other end of the spectrum. Meanwhile, low density states moved further to even lower unionization.

Box and whisker plots display this set of data on union density at the state and state-industry levels in a different way (Figures 3 and 4). Figure 3 shows that in 1985, union density was evenly distributed between 4 percent and 24 percent. The box represents half of the states and the whiskers the other half. Half of the state's union density (box) in 1985 ranged between 8.5 and 18.5 percent. However, the numbers for 2005 were between 4 and 10. This statistic indicates the range between lower and upper median shrank and dropped over these years.

The same phenomenon took place at the state-industry levels, as shown in Figures 3 and 4. State-industry level union density has experienced a similar pattern of distribution over the same periods (Figure 3). Although industries with low union density were more concentrated and industries with high unionization more dispersed in 1985, they show similar movements towards low density unionization, as was the case for state-

level unionization. By 2005, industries with low union density constituted of a majority of industries, and highly unionized industries became very few. One distinction between state-level unionization and state-industry is the upper whiskers in Figure 4. This distinction means six out of eight industries at the bottom were more closely unionized than the top two.

Theoretical Framework

The theoretical model underlying all previous studies assumes that union density is determined by the interaction of supply and demand for union services, and the density changes with factors that affect the supply and demand relationship. Union membership is assumed to be an asset that brings a flow of services to utility maximizing individuals (Hirsch, 1980). The demand for union services depends negatively on the price of these services and positively on the income (wealth) of the individuals, assuming union services are normal goods. The supply of union services depends directly on the price and inversely on the cost of providing such services. Since the price of union services is not observable, empirical studies estimate a reduced form of supply and demand, which eliminates the price of union services. Thus, union density is estimated as a function of a set of variables that are expected to determine the location of supply and demand for union services. Therefore, empirical analysis proceeds by deriving a reduced form equation for the "quantity of unionization" as a function of demand and supply shift factors. One difficulty encountered in this approach is that many of the determinants of supply and demand for union services are not directly observable or quantifiable and are therefore measured by proxy. Therefore, empirical analysis proceeds by deriving a

reduced form equation for the "quantity of unionization" as a function of demand and supply shift factors.

We include in our analysis the following variables, many of which are standard in the related literature, although some of them are included explicitly in the analysis for the first time in our paper. We first consider income factors, followed by labor force characteristics, attitudinal variables, industry mix, RTW laws, management resistance, and union activism.

Income factors

Earning. Wealth and permanent income are assumed to increase the demand for union membership, because union membership is assumed to be a normal good (Hirsch, 1980). However, higher earnings not only increase the desire for union membership, but higher earnings are also achieved by being a union member. Therefore, a bidirectional relationship exists between earnings and unionization, which may create a simultaneity problem. Economists treat earnings as an endogenous variable in their models as determinants of union density. However, simultaneity may be less problematic at the state level, because unions are less likely to raise the level of income for labor as a whole (Hirsch, 1980). Since earnings raise the level of unionization, a positive sign for this variable is expected.

Union wage-gap. Unions achieve higher wages for their members compared to nonmembers. The wage differential between union and nonunion workers is estimated around 15 percent on average for all industries. However, the gap varies substantially among different industries. We added union-nonunion wage gap to our model, because we expect workers to take advantage of higher wages achieved through union

membership. However, there is a tradeoff between wages and employment in the private sector. Higher wages also lead to lower employment, hence lower unionization. The net effect of this variable on the extent of unionization is not predicted. This variable was missing in Hirsch's study due to lack of data.

Labor force characteristics

Blue-collar. Manual workers are more likely to unionize especially in those industries in which a clear distinction between blue and white-collar workers exists. Blue-collar workers do not identify themselves as being related to management, they are less likely to have bargaining power individually, and they will achieve higher wages through unionization. An increase in the share of the blue-collar workers in the labor force is expected to increase union density.

Gender. Women are less likely to join unions, because they are less attached to the workforce and they usually work in nontraditional union occupations, such as service sectors. Therefore, the share of women in the workforce is assumed to negatively relate to union membership rate.

Race. Discrimination in organizing non-White workers may prevent them from joining a union; however, minorities assume to benefit the most from unionization (Hirsch, 1980). Previous studies produced different signs for this variable due to these two opposing forces; therefore, the outcome of the impact of this variable is indeterminate.

Public attitudes

In this paper, we include urbanization rate and four census regions to capture public attitudes towards unions.

Urbanization rate. Union density is expected to be higher in densely populated areas, because more urbanized areas facilitate union recruitment operations (Riley, 1997). It also captures the taste for unionization. Urban environments are more favorable to collective action in comparison to rural environments, because in the latter, residents are more likely to be hostile towards unions (Moore and Newman, 1988). Therefore, states with higher urban population share are expected to have more union membership; hence, we expect a positive sign for the coefficient of this variable.

Region. The US Census Bureau recognizes four census regions. Economists frequently use regions as one of many determinants of union membership. Regions capture attitudes of the employees and employers towards unions, labor force characteristics, and industrial structure of a particular region (Hirsch, 1980). In this paper, we use four census regions (South, West, Northeast, and Midwest).

Industry

Industry mix in this paper is used in two different settings. At the state level, we capture union density variations due to industry mix first by distinguishing commodity-producing industries from other industries. We also include a variable to measure the impact of firm size. At the state-industry level analysis, we are able to capture variations in unionization across industries using industry-fixed effects.

Industry structure. Most of the studies that use individual level data tend to examine industry specific characteristics such as labor and capital intensity and product market concentration (Hirsch and Berger, 1984; and Riley, 1997). Studies of union membership at the state or metropolitan level also include industry controls. Previous studies show that unionization is higher in industries with high risk to injury and illness.

Highly unionized industries are more capital intensive, operate in regulated or oligopolistic product markets, have more blue-collar workers, and involve dangerous or unpleasant working conditions (Kaufman and Hotchkiss, 2006). It is expected that unionization is higher in mining, construction, manufacturing, transportation, communications, and utilities, and lower in sales and service sectors.

Commodity production. The concentration of union density among a few industries in the US has been associated with heavy goods producing industries (Moore and Newman, 1988). Industries such as mining, construction, and manufacturing are among the most heavily unionized in comparison to other industries such as service and retail industries in the private sector. The underlying reasons for higher unionization among these sectors of the economy are lower organizing costs due to working environment and concentration of workers. A higher share of employment of these industries in a state should positively affect unionization.

Firm size. Large firms are less costly to organize and provide union services because of the economies of scale (Moore and Newman, 1988). Furthermore, workers in large plants are likely to be treated impersonally and union membership may offer protection and decreasing alienation (Riley, 1997). It is not clear what defines a small, medium, or large firm, because the definition depends on the industry considered. For example, the US Small Business Administration defines firms with less than 500 employees in manufacturing and mining as small; however, it considers firms with 100 employees or less in wholesale trade small. The European Union defines any firm with more than 250 employees as a large firm. The US Census does not define firm size and it reports firms by number of employees. A general consensus points to firms with 100

employees or less as a small firm, between 100 and 500 employees as medium size, and 500 plus as a large firm for the US and Canada. We define firms with more than 500 employees as large firms and we expect the share of employment in the large firms to be positively related to unionization in our model.

Right-To-Work law

Union density in the private sector on average was less than half in states[2] with RTW laws compared to non-RTW states in 2008 (4.3 percent versus 9.01 percent). States with RTW laws allow employees, if they choose to do so, not to pay union dues or become union members in a unionized firm. This policy means unions are not allowed to bargain on union security clauses. Union security clauses requires employees to become union members as a condition of their employment. It is generally accepted that RTW laws promote the free rider problem and reduce union membership (Ichniowski and Zax, 1991; Moore, 1998). RTW states do not require employees covered by collective bargaining to pay any dues even when they receive benefits negotiated by unions. There are currently 22 states that have adopted such laws. Since RTW laws promote free ridership and reduce unionization, we expect to have a negative sign for this variable.

Management opposition

Freeman (1988) reports that a Conference Board survey shows 45 percent of firms had "operating union free" as a labor policy goal in their Personal Practices Forum in 1983, versus 31 percent in 1977, which is an indication of a substantial increase in

[2] Right-to-work states (http://www.nrtw.org/rtws.htm): As of 2010 , Alabama, Arizona, Arkansas, Florida, Georgia, Idaho, Iowa, Kansas, Louisiana, Mississippi, Nebraska, Nevada, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, and Wyoming.

management opposition towards unionizations. In another study, Kleiner (2001) states that 40 percent of the union density decline in the private sector was due to management opposition. Empirical studies made use of the number measures based on unfair labor practices (ULP) as proxies for management opposition. ULP cases are charges against employers by employees and unions through the National Labor Relation Board (NLRB). Moore and Newman (1988) used the 3-years-average number of ULP cases divided by the number of eligible voters in the representative elections as their proxy for employer opposition. The division of ULP cases against employers by number of eligible voters in the Moore and Newman study is flawed, because a large number of voters in a single firm can dwarf this ratio; hence, it is not a representative of management opposition. Hogler et al. (2004) used an index, which is the average ratio of number of election petitions filed to number of ULP cases between 1980 and 1990, in analyzing union density variations in 2000. Dividing the number of election petitions by the number of ULP cases against employers in the Hogler study can also be misleading. In the case that unions try to organize a few big firms in comparison to many small firms, the ratio will fluctuate sharply.

In order to capture management opposition towards unions, this paper uses ULP cases in a different setting. We believe that it is more reflective of an employer's opposition towards unionization in a state to divide the number of ULP cases against employers by the total ULP cases in a state. Total ULP cases include charges against employers by employees and unions, against unions by employees and employers, and against unions by unions. ULP cases against employers are cases that are filed by unions and employees for varying reasons. ULP cases can occur during a union's organizing

drive for new member recruitment, during a union strike, and over collective bargaining contracts. ULP cases against unions are filed by employees, employers, and other unions for illegal restraint of employees, secondary boycotts, and jurisdiction disputes. For instance, 24,720 ULP cases were filed in 2005 in which 18,304 cases were against employers, 6,381 cases against unions, and a small number of cases were related to the hot-cargo agreement.[3] Most of the ULP charges against employers were due to refusal to bargain, which accounted for 8,911 cases. The second largest ULP charges against employers were alleged illegal discharges or other forms of discrimination against employees, which amounted to 8,047 cases. These two categories of charges against employers constitute 68 percent of all ULP cases in 2005. The majority of ULP cases against unions were charges of alleged illegal restraint and coercion of employees. Out of 6,381 cases filed against unions, 5,405 cases were due to illegal restraint and coercion of employees, 594 cases of illegal discrimination against employees, and 493 allegations of illegal secondary boycotts and jurisdiction dispute. Seventy five percent of the total charges against employers were filed by unions and 25 percent by individuals. Our numerator measures the level to which employers commit ULPs against labor in a state. Our denominator is the total ULP cases filed through the NLRB in a state. By dividing all ULP cases against employers by the total ULP cases, we will measure the percent of ULP charges in a state that are due to management opposing labor. Some ULP cases have a shorter life span than others; some are filed in one year and resolved in another year due to NLRB case loads and the complexity of the cases. ULP cases may also differ from one

[3] Hot-Cargo agreement is an agreement by which a union secures the support of a secondary employer in a labor dispute between the union and a primary employer, in that the secondary employer agrees to cease doing business with the primary employer resulting in loss of business to the primary employer (Kapnick, 1981).

year to another due to contract cycles, economics factors, and union activities. In order to overcome these delays and volatilities we take 3-years-averages of ULP cases against employers prior to the observation year and divide it by the averages of total ULP cases. We expect this variable to be negatively related to union density.

Union decertification. One of the management's complaints about unions has been wage differentials between union and nonunion firms. Freeman (2005) states higher wages achieved by unions are the leading cause of management opposition in the U.S. labor market. Unionized workers earned on average 18 percent higher wages than nonunion workers in 1989-1990 and 1994-1995 (Hirsch and Schumacher 1998). In some industries such as construction, the union wage gap could be as high as 50 percent. Managers in the unionized firms have been trying to get rid of unions by actively engaging in union decertification. These activities are different from those unfair labor practices committed by management during an organizing drive to unionize a new firm, which is captured by the management opposition variable. Management opposition to existing unions shows the last stage of management-union conflict over collective bargaining in which management initiates the action against unions. In the first stage, unions set a process in motion and management tries to stop it and in the latter, management tries to undo what unions have achieved through their lengthy efforts. However, not all employers try to get rid of unions in all states. The level of management aggressiveness differs in different states and in different firms due to market conditions and state-specific characteristics. Some markets might be more competitive than others and some states might be less hostile towards unionization. The variable "decertification" measures management's aggressiveness to decertify unions from their firms. To capture

management aggressiveness in decertification of existing unions, we calculated the ratio of the number of eligible voters in NLRB decertification elections to the number of union members in that state. Furthermore, we smooth out this ratio by taking an averages for 3 years prior to the observation year. We hypothesize that this proxy should have a negative effect on the extent of unionization.

Union activism

While collective bargaining in many countries takes place at the industry or national level, in the United States, it takes place at the firm level and coordination at the national level is absent (Cahuc and Zylberberg, 2004). This gives local unions more power and independence from national organizations. Freeman (1988) pointed out three hypotheses with respect to union performance and declining union membership rate in the private sector. The first hypothesis states that unions may have poorly represented their members; hence, this led to their membership decline. However, Freeman (1988) dismisses this claim based on unions' higher wage and benefits achievement for their members and polls showing member's satisfaction with their unions. The second hypothesis raises the issue of unions' failure to allocate enough resources to recruit new members and boost their membership. Freeman (1988) found support for this claim that unions did not allocate enough resources to recruit new members. However, union financial support for new recruitment has improved since 1995 (Yates, 2009). The third hypothesis is related to management opposition towards collective bargaining, which we mentioned above under management opposition. Hirsch (1980) did not consider union performance. Moore and Newman (1988) considered union performance but did not include any proxy to capture union activities. Hogler et al. (2004) considered and used an

index of social capital containing 14 social factors to measure union activities. However, Hogler's social capital index did not produce any statistically significant result. The result for the social index was negatively related to union density; however, it was not statistically significant. Hogler et al., then, ran regressions using their three main independent variables with each individual component of the social capital index. Their final model included two of the 14 social capital index components, which were statistically significant. Running such regression iteration in search of a proxy for union activism did not convince us to consider the same proxies for our model. A widely accepted proxy for union activism is not readily available. Unions actively organize new members through NLRB and outside NLRB through Card Check. Although, union activities through NLRB are reported in the NLRB's annual reports, data for card check activities are not widely available. This limited information on union activities does not reflect all union efforts, but under the circumstances, it is a reliable proxy for our purpose. Union activities are also influenced by their environment such as management opposition, labor laws, and public attitudes, which are controlled for in our models. We developed our own proxy for union activism through the NLRB for each state using the number of eligible voters in collective bargaining elections as reported by the NLRB annual reports divided by the number of nonunion workers in a state. The number of eligible voters in collective bargaining elections shows the levels of union activities in organizing new firms in a state. Organizing new entities and hence new members is costly and depends on state laws, employer opposition, firm size, and a union's strategy. A union's goals are to increase its memberships and enhance its members' benefits at minimum cost. Larger nonunion firms offer greater opportunity and payoff to unions than

smaller firms, and cost less to unionize and to provide union services. We use the number of the eligible voters in collective bargaining elections as our numerator and the number of nonunion workers as our denominator. The numerator shows the number of workers that unions target to organize. In order for a union to have a collective bargaining election in the targeted firm, they have to convince a minimum of 30 percent of the eligible workers in that firm to sign a petition showing their desire to be represented by a union. This petition then is submitted to the NLRB for the election process. The NLRB will then conduct a secret ballet vote after it verifies the authenticity of the petition. The denominator is the number of the workers in the private sector in a state that are not unionized. The size of the private sector labor force in each state differs and dividing the number of the eligible voters in collective bargaining elections by the number of nonunionized workers will reflect the level of union's activities in each state. This ratio will capture a union's organizing activities through the NLRB in a state. Elections take time to run their course and differ in their frequencies year to year. Some elections take longer to conduct due to NLRB workloads or employer's resistance. In some years, the number of elections is higher due to faster process by the NLRB, a union's activities, and less opposition by employers than other years. In order to smooth out the volatility in elections in a particular year, we take the averages of 3 years prior to the observation year. We expect union activism to be positively related to union density.

Empirical Methodology

The empirical model we use in the state level regression is:

$$(1) \qquad D_s = \alpha + X_s\beta_s + e_s$$

D stands for union density, α is the intercept, *X* is a vector of explanatory variables, β is a vector of coefficients, *e* is the error term, and *s* is the state subscript. Vector *X* includes median earning level in the state, union-nonunion wage gap, share of blue-collar workers in the labor force, female share, minority share, urbanization rate, region, share of commodity production, firm size, RTW, employer opposition, union decertification, and union activism.

At the state-industry level, the empirical model is:

$$D_{si} = \alpha + W_{si}\delta_{si} + X_s\beta_s + I_i + e_{si} \quad (2)$$

where *D* is the union density at state-industry, *W* is a vector of variables measured at the state-industry level, *X* is a vector of explanatory variables measured at the state level, β and δ are vectors of coefficients, and *I* is industry-fixed effects. Subscripts *s* and *i* denote state and industry, respectively. Vector *W* includes median earning level, the union wage gap, blue-collar, female share, and minority share. Vector X includes urbanization rate, region, firm size, RTW, employer opposition, union decertification, and union activism.

We will estimate equations (1) and (2) first by OLS for each year 1985, 1995, and 2005, as well as the pooled sample over the 3 years. One econometric problem that plagues this literature is the simultaneity problem. The problem emerges first in relation to the earnings and union density. Since unions raise wages, it could be argued that the causality runs in both directions between median state earnings and union density. We solved the problem of simultaneity for earnings by using an instrumental variable for earnings. Following Hirsch (1980) we used education, age, marital status, and male labor-force participation as instruments for earnings. Secondly, studies which focus on RTW

laws as possible determinants of union density treat this variable as an endogenous variable, on the grounds that states with high union density are less likely to pass such laws (Hirsch, 1980; Koeller, 1985; Davis and Huston, 1995). Therefore, the causality may run from union density to RTW laws. We treat this variable as an exogenous variable for the following two reasons. First, these laws were for most states adopted in the past[4] and an individual's decision to join a union today is not associated with the passage of such laws (Ichniowski and Zax, 1991). Second, most recent literature agrees on the negative impact of RTW laws on union density due to free rider problems (Ichniowski and Zax, 1991; Moore, 1998).

Our analysis of union density continues by employing the Oaxaca-Blinder decomposition method. Oaxaca (1973) and Blinder (1973) decomposition does not appear much in the union density literature; however, it is frequently used in gender and minority wage gap literature. This technique allows us to separate the changes in average union density over time into two parts. Part one (explained) of the decomposition tells us the changes in unionization due to the differences in the average level of characteristics weighted by a base year coefficient. Part two (unexplained) of the decomposition gives us the differences in the slope coefficients between the base year and comparison year weighted by average level of characteristics in the comparison year. Equation (3) shows the decomposition of the change in average union density ($\overline{D}$) in 1985 and 2005 into part one and part two, where the bar represents average value of characteristics and βs represent slope coefficient estimates. Superscript denotes the years.

[4] Most states adopted RTW laws in the 1940s and 1950s, however three states adopted such laws in our study periods. Idaho (1986), Texas (1993), and Oklahoma (2001).

$$(3) \qquad \overline{D}^{05} - \overline{D}^{85} = \left(\overline{X}^{05} - \overline{X}^{85} \right) \beta^{05} + \left(\beta^{05} - \beta^{85} \right) \overline{X}^{85}$$

The first expression on the right is the explained portion (the gap due to endowment) and the second expression on the right is the unexplained portion (the gap due to returns to observed characteristics and intercept). The decomposition method, however, poses two identification problems. The first identification problem (the index problem) arises from the sensitivity to the choice of the base year. The question is whether we should take 1985 or 2005 as the base year. A third option which we will adopt in the paper is to use the average of 1985 and 2005 as the base. The second identification problem arises from the use of categorical variables when using detailed Oaxaca decomposition of year differential. According to Yun (2005), the detailed coefficient effects (unexplained portion of the decomposition) of the categorical variables are not invariant to the choice of the reference group. Oaxaca and Ransom (1999) showed, however, the overall decomposition and the endowment effects are invariant to the base group. Moore and Newman (1988) neglect the second identification problem. We incorporate the bases in all categorical variables in our analysis to overcome the issue of leaving out the base.

Data

The dependent variable is the percent of nonagricultural wage and salary workers in the private sector who are union members. This variable is derived from the Current Population Survey (CPS) and is accessed at http://www.ceprdata.org/cps/org_data.php.

The explanatory variables, which are reported in Table 2 and 3, are defined as follows. Earnings are measured as median weekly weighted average of male and female

workers. Wage gap is measured as percent difference in the hourly wage between union and nonunion workers. Blue-collar workers are the percent of the labor force who work as manual operatives. Female share is the percentage of women in the labor force. Minority share is the percentage of non-White workers in the labor force. We used percentage of population living in metropolitan areas as defined by the CPS as our urbanization rate. We lagged this variable by 5 years and used 1980, 1990 and 2000 Census data for 1985, 1995, and 2005 analysis, since the Census Bureau conducts its more accurate surveys every 10 years. Earning, wage gap, share of blue-collar, female share, minority share, and urbanization rate are derived from the CPS. Regional dummies are four main census regions from the CPS. Commodity share represents the percentage of workers who are employed in goods producing industries (mining, construction, and manufacturing) and is derived from the CPS. Firm size is the percent of the labor force working in firms with more than 500 employees and is derived from http://www.ces.census.gov/index.php/bds_/bds_database_list. RTW states[5] are those states that adopted RTW laws prior to the observation years. A dummy variable is assigned for this variable and equals one if the state is a RTW state and zero otherwise. Employer opposition is measured by the number of ULP charges against employers in the representation elections divided by total ULP charges. This ratio is derived from the NLRB annual reports at (http://www.nlrb.gov_/annual-reports). Union decertification is the number of eligible voters in the decertification elections divided by the number of union members in the private sector and is derived from the NLRB annual reports.

[5] RTW states are as follows: Alabama, Arizona, Arkansas, Florida, Georgia, Idaho, Iowa, Kansas, Louisiana, Mississippi, Nebraska, Nevada, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Wyoming, accessed October 28, 2009, http://www.nrtw.org/rtws.htm.

Activism is measured by dividing the number of eligible voters in the collective bargaining elections by the number of nonunion workers in the private sector. This ratio is also derived from the NLRB annual reports.

Industry 8 is wholesale trade and is the reference industry. The remaining industries are as follows: Construction 1; Mining 2; Durable Manufacturing 3; Nondurable Manufacturing 4; Retail Sales 5; Service (finance, insurance, and real estate) 6; and Transportation, Communication, and Utilities 7.

Results

Results from OLS regressions of equation (1) are reported in Table 4. These results indicate that our model explains between 75 and 87 percent of the variations in union density between 1985 and 2005. Table 5 reports the results for 2SLS regressions in which we used an instrumental variable for earnings.[6] Estimates for these two models are similar and do not suggest that simultaneity is a serious problem.

Our results show that earning is a positive determinant of unionization at the .10 level in our pooled model and at the .01 level in 2005. Unionization in 1995 was not impacted by the level of earnings; however, it was negatively impacted in 1985. The pooled model result meets our expectations and is consistent with the prediction based on unionization being a normal good. An increase in the level of income leads to a greater demand for union membership, everything else being constant.

[6] Instrumental variable for earnings includes all explanatory variables plus a vector of new variables (workers with less than high school diploma, workers between 16 and 24 years of age and 55 years and older, workers who are married).

Wage-gap between union and nonunion workers has no significant impact on union density in our models. The effect of wage gap might have been captured by other variables such as industry and regions (Hirsch, 1980).

The results for the labor force structure and personal characteristics are mixed. Share of blue-collar workers in the labor force had a positive and significant effect on unionization in 2005 and the entire period. This confirms our expectations that blue-collar workers are more likely to join unions than white-collar employees. Hirsch (1980) and Moore and Newman (1998) found similar findings. Blue-collar workers are the backbone of the unions in the private sector; however, their share relative to total employment is decreasing. Percentage share of total employment for the blue-collar workers has dropped from 39.1 to 23.4 during the period of 1950-2003 in the US (Kaufman and Hotchkiss, 2006). This has had an impact on private sector unionization and the market outcome in the US.

Overall, female share had no significant impact on union density between 1985 and 2005. However, it had a positive and significant impact in 2005. Its overall impact on unionization has been negative between 1985 and 2005, however not significant. Our results for this variable differ from the results reported by Moore and Newman, however consistent with Hirsch's study. These results mask the rise in female union membership as a whole. Thirty four percent of all union members in 1983 were women in the US and this figure increased to 43 percent in 2004 (Milkman, 2007). However, most of this increase was in the public sector. According to Milkman (2007), 60.8 percent of all unionized women were employed in the public sector compare to 36.7 percent unionized men in 2004. In the private sector, this figure is much lower (5.4 and 10.1 percent for

women and men, respectively). This statistic means female workers are as likely to unionize as male workers; however, unlike their male counterparts, they are concentrated in fewer occupations.

Minority share in the labor force has no significant effect on unionization in any period of our study.[7] Hirsch found similar results for this variable.

Urbanization rate has no significant impact on the extent of unionization in our models. The sign of the coefficient for this variable, however, is positive, which was expected and is consistent with the literature that urban areas are more likely to be unionized. This variable had a significant impact on union density in Moore and Newman's pooled model. This difference between our results and theirs may lie in the choice of proxy for urbanization rate.

Unionization was higher in the Midwest region. States in the South are also related to union density and their impact is negative and significant. This is not surprising since the South region is thinly unionized. The West region has a positive and significant impact in 2005; however, the Northeast region has no significant impact on union density in any year. Regional differences are not only important with respect to industry concentrations and economic development, which impact union density, but also capture the attitudes of workers towards unions.

The share of goods-producing industries was removed from our analysis at the state level due to multicolinearity problem between this variable and the share of the blue-collar workers. We will discuss industry's effects on unionization in our state-industry level regression analysis and we will report those results next. Moore and

[7] We also replaced minority share of the labor force with Blacks in the labor force; however, our results for Black share of the labor force were similar to minority share.

Newman's results for goods producing industries did not reach any statistically significant levels.

The percent of the labor force in a state who are employed in firms with more than 500 employees is positively related to union density in all our models, but its coefficient is not statistically significant. We expected to have a positive sign for this coefficient, because large firms are less costly for unions to organize and are more profitable due to economies of scale.

RTW laws are negatively related to union density in all our models. This variable is a negative determinant of unionization and its coefficient is highly significant in 1985 and the entire period. Recent literature on the RTW states also concludes the negative impact of such laws on union density due to free rider problems. As of this writing, 22 states have passed such laws and these states are on average less unionized than national averages and non-RTW states.

The proxy for management opposition towards unionization that we created in this study meets our expectations. In all models, this variable shows that employer opposition is a negative determinant of union membership rate with a statistically significant coefficient. This result gives us confidence in our choice for this variable and it is consistent with the wider literature. These results confirm the hypothesis that management resists unionization for economic reasons. Employer opposition to unionization for union workers means reduced bargaining power and lower wages.

Union decertification variable, which measures employer's aggressiveness in decertifying unionized firms, does not impact union density in a significant way, at least in our models. In this study, we created this variable as a control for management

aggressiveness engaging in decertification of existing unions. The effect of this variable might partly have been captured by the strong influence of employer opposition on union density in these models.

Finally, union activism, another variable that we created in this study to measure union activities in recruiting new members, produced strong results in these regressions and is a positive determinant of union membership rate. Admittedly, unions are also very active recruiting new members outside NLRB election procedures (card check) and we are capturing part of their activities through NLRB reports. Unions have been trying to push for new laws bypassing NLRB‘s bureaucratic election procedures; however, as of this writing, they have not succeeded. Nevertheless, our results indicate that unions have been trying to recruit as many members as they can through NLRB channels. Union activism impacts market outcome in many ways. Two frequently quoted impacts of the unions in the labor market are wages and employment. Unions redistribute income through collective bargaining in favor of their members and they impact the level of employment.

Results for state-industry models (Tables 6 and 7), although similar to the state level results, differ in two respects. First, variables union wage gap, female share, and urbanization rate produce stronger results. Second, state-industry results produce more detailed information for our eight industries.

Union-nonunion wage gap at the state-industry is directly related to the union membership rate and has a statistically significant impact in two out of four regressions. The sign for this variable is also as we expected. At the state level, we had mixed signs for this variable with an overall (pooled) negative sign. The impact of wage gap on union

density, therefore, is better captured at the industry level than in the aggregate. Female share is also a negative determinant of unionization at the state-industry level and its coefficient is highly significant. These results are also consistent with the literature that female workers in the private sector are less likely to unionize due to part time employment and the concentration of women in less unionized sectors. This variable did not produce the same results at the state level. Results for the urbanization rate at the state-industry level are a positive determinant of union density and its coefficient is statistically significant in three out of the four models. At the state-level analysis, this variable was positively related to union density; however, it did not have significant impact on unionization. Results at the state-industry level are consistent with Hirsch (1980) and Moore and Newman's study (1988).

Results for industries are as follows. Mining and construction are two industries that are negatively related to union density and their coefficients are statistically significant. These results do not meet our expectations for these industries, which are traditionally strong in union membership. Construction industry experienced stiff competition from nonunion firms in this period. The share of construction industry as a percent of the private sector employment has risen for the past three decades; however, union density in that industry has declined over the same period. The manufacturing sector experienced an intense competition by globalization in the past three decades. They have lost a great deal of market share to other country's manufacturers operating in and outside of the US. Many manufacturing jobs moved to China or other Asian countries in this period and foreign manufacturers such as Toyota Motor Company, which moved part of its manufacturing operation into the US, has been operating free of

unions (Kaufman and Hotchkiss, 2006). However, our results for the manufacturing sector are positive and the coefficients for durable and nondurable manufacturing are positively related to unionization at the state-industry level.

Union density is also positively related to transportation, communication, and utilities and their coefficients are statistically significant in all our regressions. This was expected, since these industries operate more in monopolistic or oligopolistic markets and barriers to entry are high. Surprisingly, union density is also higher in service and retail industries for these periods. Traditionally, these industries were not unions' stronghold in the past.

Our new variables, employer opposition, decertification, and union activism, have similar results as those at the state level. The variable for management opposition towards unionization shows that employer opposition is inversely related to the union membership rate at the state-industry. The union decertification variable, which measures employer's aggressiveness in decertifying unionized firms at the state level, is also inversely related to union density at the state-industry level in our pooled model. These results are different from our state level models, where the decertification variable did not impact union density much. Management opposition towards union organizing drives and employer aggressiveness to decertify existing unions are two of the three new variables that we introduced in this paper. These two variables which measure employer position towards unionization meet our expectation and correctly reflect underlying assumptions of the theory of the firms. Firms are assumed to maximize profit and minimize costs. Unions raise wages, which are a big part of input costs.

Union activism again is directly related to union density and unionization increases as union activism increases in all models. The results for this variable have been consistent for all models both at the state and state-industry regressions. These results meet our expectation for this variable and correctly reflect our choice.

Although the results for the state and state-industry are very similar in the determinants of union density across states and over time, there exist some differences. The state-industry results, although confirming state level results, are more reflective of the determinants of unionization in line with our expectations and that of the literature.

Next, we proceed to exploring the sources of change in average union density over time through Oaxaca-Blinder decomposition. Since simultaneity did not emerge as a problem, we base Oaxaca-Blinder decomposition from OLS regression. The Oaxaca-Blinder decomposition results for the state-level observation are listed in Table 8. As reported in Table 8, column one, a total of 6.09 percentage point decline in average union density occurred between 1985 and 2005. The decomposition shows a 10.63 percentage point reduction in unionization that is due to endowment effect and 4.53 percentage point favorable change in unionization due to coefficient effect. The explained portion of the decomposition is statistically significant at .05 level.

The coefficients for management opposition and union activism are statistically significant in the explained portion of the decomposition. In the unexplained portion, the coefficients for earning, female share, employer opposition, and two regional variables are statistically significant in the Oaxaca decomposition. Union activism and management opposition, although statistically significant, accounted for a 2.33 and 1.75 percentage point decline. In the unexplained part of the decomposition, the share of

female workers, earnings, and management opposition had a huge positive impact on union density over this period; however, the net result was just 4.53 percentage points due to a large negative intercept. The coefficients that are statistically significant contributed to union density between 34.37 and less than .70 percentage points. Female share is the largest contributor among these variables and the West region is the smallest. Female share of employment has been growing over the past three decades and so has unionization among female workers. The second and third largest contributors to union density in the unexplained part were earnings and management opposition, which accounted for 25.12 and 24.29 percentage points, respectively. The big positive percentage point for employer opposition reflects the decline in the employer opposition effects on the extent of unionization over time.

Table 8, column two, shows that a 3.81 percentage point of the decline happened between 1985 and 1995, and column three reports that a 2.28 percentage point decrease happened between 1995 and 2005. These statistics indicate that a big portion of the decline in union density occurred in the first decade of our study. Decade-by-decade decomposition gives a more detailed explanation with respect to the roles of the determinants of union density. For example, we previously reported that the coefficient for earnings was statistically significant in the unexplained portion of the decomposition at the state level between 1985 and 2005. The coefficient for earning is statistically significant for the first decade and not for the second decade. However, the coefficient for union activism is not significant in the first decade but it is significant in the second decade. These results mean the decline for this determinant occurred recently. We also reported a big positive contribution in the unexplained portion by employer opposition,

which again happened in the earlier decade and was minimal in the later decade. This detailed examination of each decade shows not only that union density decline slowed down in recent years, but also shows factors that caused the slowdown in the decline.

A total of 7.07 percentage point decline in average union density occurred between 1985 and 2005 at the state-industry level (Table 9). The decomposition shows a 6.64 percentage point favorable change in unionization that is due to endowment effect and 13.72 percentage point reduction in unionization due to coefficient effect. Furthermore, Table 9 reports that explained and unexplained portions of decomposition as a whole are both statistically significant. The coefficients for earnings, blue-collar, management opposition, union activism, and mining are statistically significant in the explained portion of the decomposition. In the unexplained portion, the coefficients for female share, union activism, two regions, and all industries but mining and durable goods are statistically significant in the Oaxaca decomposition. Average earnings accounted for a 10.82 percentage point increase and average share of blue-collar workers and average union activism accounted for a 1.84 and 1.90 percentage point decrease, respectively. Management opposition and mining accounted for less than one percentage point. In the unexplained part of the decomposition, the effect of female share, union activism, and construction industry accounted for 9.75, 1.63, and 1.58 percentage point increase, respectively. Regions, nondurable, retail, transportation, utility, communication, and wholesale trade each accounted for less than one percentage point except for the service industry which accounted for a 1.37 percentage point decrease.

Results for state-industry in the decomposition model are similar to the state level decomposition with some differences. Similarities are in the determinants of union

density such as management opposition and union activism impacting unionization over time. Dissimilarities arise in earnings and blue-collar workers. For instance, share of blue-collar workers had a negative impact on unionization at the state level; however, its coefficient was not statistically significant. At the state-industry level, this coefficient was negative and statistically significant. Another big difference between state and state-industry decomposition is the magnitude of the intercepts. We reported a negative 93.78 percentage point in intercept at the state level in Table 8. This figure for state-industry level is 28.31 percent, which is less than a third of the state level. These results mean that industry control offers some detailed explanation for analysis of union density with respect to determinants of unionization that are not immediately obvious at the state level analysis.

At the state-industry level, a 4.92 percentage point decline occurred between 1985 and 1995 and 2.14 percentage point between 1995 and 2005. These results are similar to the state level results, where the earlier decade experienced larger union density decline than the later decade. Decade by decade results are reported in columns two and three in Table 9.

Overall, our results for determinants of union density across state and state-industry and over time are very similar. State-industry analysis is more precise due to more observations at the industry levels.

Conclusion

This study explored the factors that accounted for variations in the US private sector union density at the state and state-industry levels in 1985, 1995, and 2005, and measured the magnitudes of the changes that are attributable to the changes in

endowments and returns to endowments utilizing decomposition analysis. A reduced form model of union density was adopted and estimated for 1985, 1995, 2005, and a pooled regression over 1985-2005 periods. We employed determinants of unionization that were also utilized by other studies in interstate and SMAS. In addition to examination of a time period not covered by previous studies, the major contribution of our paper is development and inclusion of new measures of union and management behavior. Two of the three variables that we introduced (employer opposition and union activism) turned out to be significant determinants of union density. The variable for employer opposition significantly reduced union density while union activism had the opposite effect and positively impacted unionization. Our third proxy for employer's aggressiveness via attempts to decertify existing unions had no significant impact on union density. The Oaxaca-Blinder decomposition method was utilized to examine in more detail the causes of union density decline over years. As was reported above, most determinants of union membership rate across state and state-industry also caused the decline over time. The overall contribution of the endowment part of the decomposition of union density for the state and state-industry were -10.63 and 6.64 percentage point and for the coefficients (unexplained part) were 4.53 and -13.72, respectively, which led to a net decline in union density for the periods of our study. Average earning and female share are positive contributors in the endowment effects and blue-collar workers, union activism, and employer opposition are negative contributors. In the coefficient effects, female share and employer opposition account for positive contributors. The biggest single negative contributor to the unexplained part is the intercept or the shift, which are minus 93.72 and 28.31 percentage point for state and state-industry, respectively.

Furthermore, we employed a state-industry level analysis that is unique to this study and it was very helpful to shed more light on the significance of different industries in our study.

Our results show that union density is positively determined by the level of earnings, share of blue-collar workers in the labor force, and union activism. Unionization is found to be negatively impacted by employer opposition and RTW laws. Other variables in the model do not produce consistent sign or their impacts are not statistically significant. Regions, according to our analysis, play a significant role. We found, for example, the Midwest region is more likely to be unionized than the south region of the country. These results might be due to more favorable labor laws in the Midwestern region compared to the South region. Our state-industry level analysis shows that industries exhibit strong results for all four regressions.

Overall, our model confirms some of the findings of the previous studies for determinants of unionization and more importantly, it verifies our choice of proxies for employer opposition and union activism.

Table 1: Union Density in the Private Sector by State

Year	Median	Mean	STDEV
1985	12.68	13.18	5.32
1995	9.02	9.36	4.39
2005	5.81	7.08	3.88

Source: CPS- ORG files.

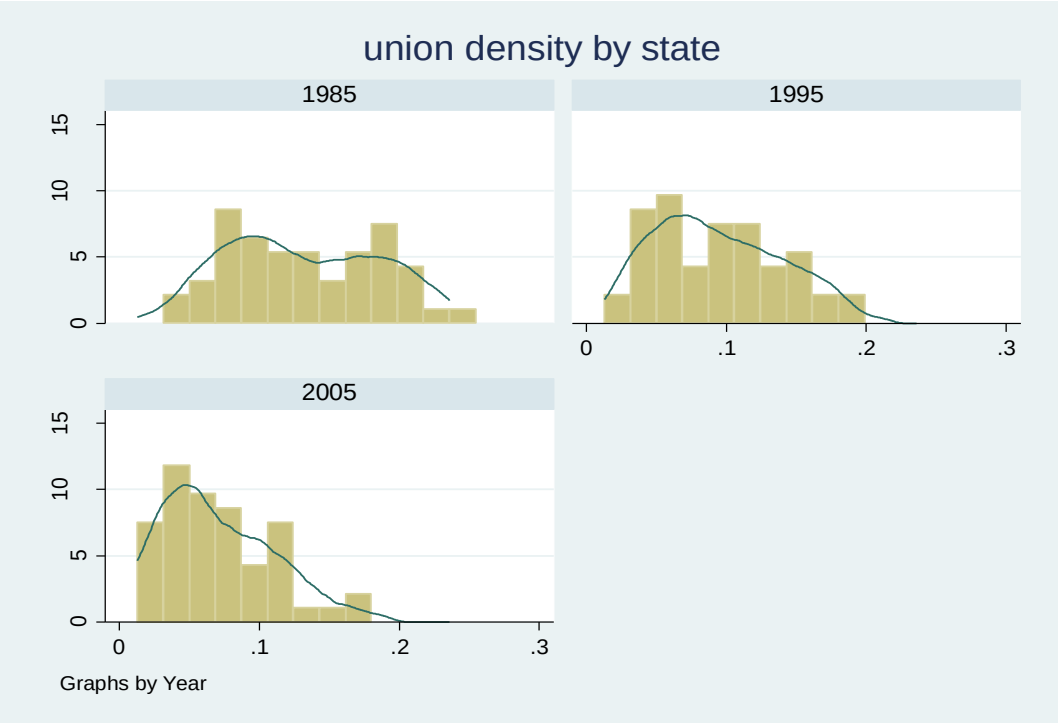

Figure 1: Distribution of Union Density by State

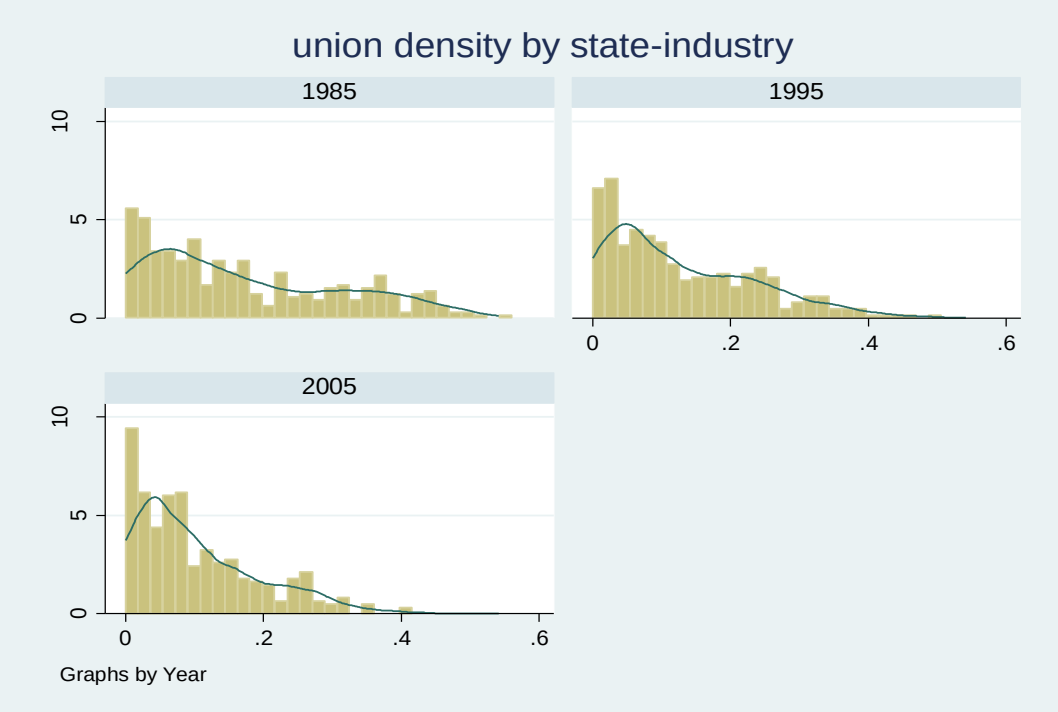

Figure 2: Distribution of Union Density by State-Industry

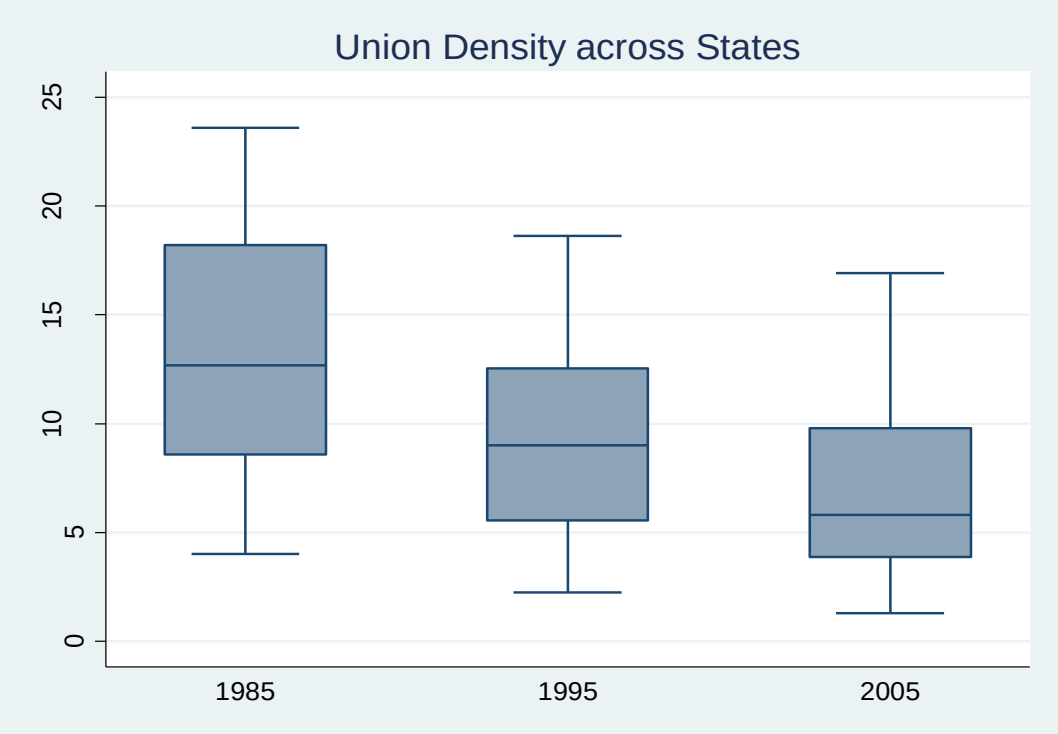

Figure 3: Box Whisker Plot for State Union Density

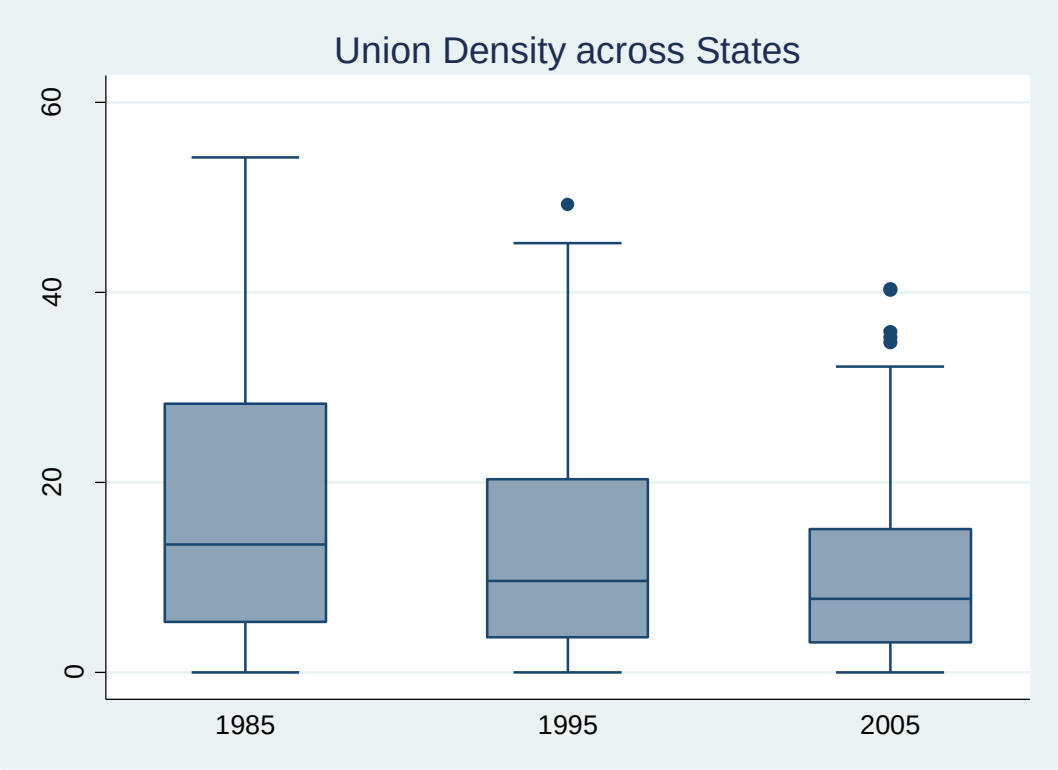

Figure 4: Box Whisker Plot for State-Industry Union Density

Table 2: Variables, Means, Standard Deviations, and Definitions (state level).

Variable	Mean	STDEV	Definition
Dependent	.0987	.0519	Percent of all private sector workers who are union members.
Earning	4.1475	1.1877	Weighted average of male and female median earning in hundreds of dollars.
Wage-gap	.4126	.1727	Percent wage-gap between union and nonunion workers.
Female share	.4755	.0225	Share of women in the labor force.
Minority share	.2003	.1560	Share of non-White workers in the labor force.
Blue-collar	.4197	.0606	Percent of manual workers in the labor force.
Share of commodity	.3516	.0978	Percent of workers employed in mining, construction, and manufacturing.
Firm size	.4435	.0629	Percent of the labor force in firms with more than 500 employees.
Decertification	.0039	.0038	Number of eligible voters in decertification elections/number of union members (employer aggressiveness).
Activism	.0024	.0015	Number of eligible voters in collective bargaining elections/number of nonunion workers (union activism).
Management opposition	.7737	.0703	Number of ULP cases against employers/total number of ULP (employer opposition).
RTW	.4133	.4940	Equal 1 in RTW state, zero otherwise.
Urban	.6698	.2115	Percent of state population living in metropolitan areas.
Region			Four Census regions: South, West, Northeast, and Midwest.

Table 3: Variables, Means, Standard Deviations, and Definitions (state-industry level).

Variable	Mean	STDEV	Definition
Dependent	.1347	.1171	Percent of all private sector workers who are union members.
Earning	4.6135	1.6914	Weighted average of male and female median earning in hundreds of dollars.
Wage-gap	.2954	.2565	Percent wage-gap between union and nonunion workers.
Female share	.3581	.1811	Share of women in the labor force.
Minority share	.1923	.1606	Share of non-White workers in the labor force.
Blue-collar	.5348	.2519	Percent of manual workers in the labor force.

Table 4: Results for Determinants of Union Density for OLS (equation (1)).

	1985	**1995**	**2005**	**pooled**
Earnings	-.0224	0.0253	0.0238	0.0127
	(0.010)**	(.018)	(0.007)***	(0.007)*
Wage-gap	-0.0543	0.0375	0.0058	-0.0109
	(0.058)	(0.050)	(0.025)	(0.024)
Blue-collar	0.0753	0.1178	0.2737	0.1994
	(0.134)	(0.136)	(0.075)***	(0.071)* **
Female share	-0.0953	-0.3546	0.6198	-0.0204
	(0.333)	(0.267)	(0.202) ***	(0.152)
Minority share	-0.0619	-0.0071	0.0198	-0.0068
	(0.059)	(0.034)	(0.028)	(0.026)
Urban	0.0092	0.0234	0.0198	0.0338
	(0.042)	(0.039)	(0.022)	(0.022)
Firm size	0.0619	0.0640	0.0940	0.0393
	(0.119)	(0.137)	(0.072)	(0.066)
RTW	-0.0278	-0.0129	-0.0147	-0.0221
	(0.013) **	(0.010)	(0.009)	(0.006) ***
Management opposition	-0.4069	-0.1424	-0.1015	-0.1391
	(0.089)***	(0.079) *	(0.044) **	(0.044) ***
Decertification	0.3699	-0.4446	-0.3924	-0.6429
	(1.324)	(1.641)	(0.631)	(0.692)
Activism	17.9958	12.2513	18.4436	12.9921
	(4.918) ***	(2.251)***	(3.771) ***	(2.035) ***
Northeast	-0.0157	0.0154	-0.0278	-0.0054
	(0.019)	(0.018)	(0.012)**	(0.009)
Midwest	0.0474	0.0233	-0.0112	0.0195
	(0.012)***	(0.014)	(0.009)	(0.008)**
South	-0.0088	-0.0233	-0.0436	-0.0247
	(0.015)	(0.016)	(0.009)***	(0.008)***
_Iyear_1995				-0.0347
				(0.009) ***
_Iyear_2005				-0.0599
				(0.021) ***
Constant	0.4633	0.1418	-0.4546	0.0611
	(0.214)**	(0.245)	(0.147) ***	(0.101)
Observations	50	50	50	150
R-squared	0.79	0.75	0.87	0.78

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 5: Results for Determinants of Union Density for 2SLS (state).

Variables	**1985**	**1995**	**2005**	**pooled**
Earnings	0.0025	0.0173	0.0441	0.0293
	(0.003)	(0.026)	(0.012)***	(0.014)**
Wage-gap	-0.0531	0.0286	0.0243	-0.0002
	(0.059)	(0.056)	(0.022)	(0.025)
Blue-collar	0.1430	0.0975	0.3648	0.2494
	(0.166)	(0.149)	(0.088)***	(0.085)***
Female share	0.0163	-0.3859	0.8448	0.0993
	(0.342)	(0.287)	(0.255)***	(0.178)
Minority share	-0.0473	-0.0126	0.0283	0.0001
	(0.063)	(0.034)	(0.025)	(0.026)
Urban	0.0082	0.0269	0.0028	0.0265
	(0.042)	(0.038)	(0.030)	(0.023)
Firm size	0.0752	0.0549	0.1409	0.0588
	(0.117)	(0.33)	(0.088)	(0.068)
RTW	-0.0233	-0.0143	-0.0089	-0.0192
	(0.0153)	(0.010)	(0.010)	(0.007)***
management opposition	-0.3353	-0.1438	-0.1148	-0.1289
	(0.125)**	(0.080)*	(0.051) **	(0.047) ***
Decertification	0.0688	-0.9288	-0.3596	-0.6895
	(1.417)	(2.039)	(0.800)	(0.650)
Activism	16.1884	12.4510	17.5857	12.2621
	(5.203)***	(2.346)***	(4.513) ***	(2.163) ***
Northeast	-0.0122	0.0148	-0.0297	-0.0053
	(0.020)	(0.017)	(0.014)**	(0.009)
Midwest	0.0460	0.0236	-0.0167	0.0185
	(0.012)***	(0.014)	(0.012)	(0.008)**
South	-0.0091	-0.0225	-0.0487	-0.0251
	(0.016)	(0.015)	(0.012)***	(0.008)***
_Iyear_1995				-0.0519
				(0.016) ***
_Iyear_2005				-0.1061
				(0.040)***
Constant	0.2509	-0.2056	-0.7199	-0.0807
	(0.321)	(0.311)	(0.198) ***	(0.168)
Observations	50	50	50	150
R-squared	0.78	0.75	0.83	0.77

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 6: Results for Determinants of Union Density for OLS (equation (2)).

	1985	**1995**	**2005**	**pooled**
Earnings-ind	0.0386	0.0382	0.0276	0.0189
	(0.014)***	(0.009) ***	(0.005)***	(0.004) ***
Wage-gap-ind	0.0133	0.0531	0.0344	0.0049
	(0.018)	(0.018)***	(0.017)*	(0.012)
Blue-collar-ind	0.3159	0.2791	0.2847	0.1879
	(0.059) ***	(0.052) ***	(0.53)***	(0.029)***
Female share-ind	-0.2449	-0.1423	0.0289	-0.2443
	(0.081) ***	(0.083)*	(0.076)	(0.049) ***
Minority share-ind	-0.0516	-0.0411	0.0086	-0.0230
	(0.053)	(0.028)	(0.026)	(0.021)
Urban	0.0786	0.0535	0.0374	0.0428
	(0.028)***	(0.029)*	(0.023)	(0.018) **
Firm size	0.0014	-0.0169	0.0183	0.0215
	(0.089)	(0.094)	(0.082)	(0.054)
RTW	-0.0314	-0.0183	-0.0259	-0.0306
	(0.008) ***	(0.008)**	(0.007) ***	(0.005) ***
Management opposition	-0.1961	-0.1497	-0.0511	-0.1524
	(0.084)**	(0.058)**	(0.048)	(0.038) ***
Decertification	-0.5206	-1.0451	-0.5886	-1.0072
	(0.791)	(1.648)	(0.911)	(0.546)*
Activism	14.0662	12.9528	23.3454	14.8201
	(3.034) ***	(2.709) ***	(3.749) ***	(1.828) ***
Northeast	0.0202	0.0085	-0.0198	-0.0010
	(0.013)	(0.010)	(0.009)**	(0.006)
Midwest	0.0562	0.0338	0.0089	0.0316
	(0.012) ***	(0.009)***	(0.008)	(0.006)***
South	-0.0029	-0.0211	-0.0319	-0.0228
	(0.013)	(0.010)**	(0.008)***	(0.006)***
Construction	-0.1134	-0.1040	-0.0556	-0.0374
	(0.039)***	(0.032)***	(0.028)**	(0.019)*
Mining	-0.1032	-0.1519	-0.1709	-0.0574
	(0.037) ***	(0.042)***	(0.038)***	(0.026)**
Durable	0.0449	0.0048	-0.0202	0.0470
	(0.024)*	(0.020)	(0.016)	(0.011)***
Nondurable	0.1051	0.0555	0.0290	0.1060
	(0.026) ***	(0.020)***	(0.018)	(0.011)***
Retail	0.0860	0.0874	0.1025	0.0945
	(0.030)***	(0.024)***	(0.020)***	(0.14)***
Service	0.1644	0.1301	0.0391	0.1250
	(0.031) ***	(0.031)***	(0.024)	(0.018)***
TransUtComm	0.1927	0.1233	0.0993	0.1758
	(0.021) ***	(0.018)***	(0.016)***	(0.009)***

Table 6 Continued

	1985	**1995**	**2005**	**pooled**
_Iyear_1995				-0.0562
				(0.007)***
_Iyear_2005				-0.0943
				(0.014)***
Constant	-0.0539	-0.1229	-0.2664	0.0766
	(0.111)	(0.097)	(0.084)***	(0.046)
Observations	328	318	282	928
R-squared	0.79	0.77	0.77	0.74

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 7: Results for Determinants of Union Density for 2SLS (state-industry).

	1985	**1995**	**2005**	**pooled**
Earningsind	0.0520	0.0649	0.0371	0.0265
	(0.018)***	(0.000)***	(0.000)***	(0.005)***
Wage-gapind	0.0137	0.0652	0.0376	0.0059
	(0.019)	(0.020) ***	(0.017)**	(0.012)
Blue-collarind	0.3426	0.3480	0.3279	0.2019
	(0.061)***	(0.061)***	(0.061)***	(0.030)***
Female shareind	-0.2219	-0.0668	0.0859	-0.2245
	(0.082)***	(0.097)	(0.081)	(0.050)***
Minority shareind	-0.0449	-0.0294	0.0162	- 0.0188
	(0.053)	(0.028)	(0.026)	(0.020)
Urban	0.0780	0.0369	0.0264	0.0365
	(0.028)***	(0.032)	(0.024)	(0.018)**
Firm size	0.0202	0.0235	0.0185	0.0329
	(0.087)	(0.097)	(0.085)	(0.054)
RTW	-0.0292	-0.0129	-0.0223	-0.0290
	(0.008) ***	(0.009)	(0.007)***	(0.005)***
Management opposition	-0.1509	-0.1255	-0.0640	-0.1460
	(0.084)*	(0.057)**	(0.050)	(0.039)***
Decertification	-0.5258	0.6761	-0.5250	-0.9520
	(0.786)	(1.900)	(0.941)	(0.539)
Activism	12.9530	11.7179	22.7005	14.3869
	(2.953) ***	(2.598)***	(3.806)***	(1.801) ***
Northeast	0.0245	0.0096	-0.0185	0.0002
	(0.014)*	(0.011)	(0.009)*	(0.006)
Midwest	0.0570	0.0356	0.0078	0.0326
	(0.012) ***	(0.009)***	(0.008)	(0.006)***
South	-0.0019	-0.0193	-0.0313	-0.0214
	(0.013)	(0.010)*	(0.008)***	(0.006)***
Construction	-0.1288	-0.1366	-0.0648	-0.0423
	(0.040)***	(0.034)***	(0.029)**	(0.019)**
Mining	-0.1308	-0.2492	-0.2239	-0.0776
	(0.039)***	(0.057)***	(0.046)***	(0.027)***
Durable	0.0322	-0.0258	-0.0318	0.0404
	(0.025)	(0.024)	(0.019)*	(0.011)***
Nondurable	0.0961	0.0301	0.0186	0.1015
	(0.027) ***	(0.024)	(0.020)	(0.012)***

Table 7 Continued

	1985	**1995**	**2005**	**pooled**
Retail	0.1014	0.1197	0.1219	0.1055
	(0.033)***	(0.028)***	(0.023)***	(0.015)***
Service	0.1738	0.1395	0.0391	0.1286
	(0.032) ***	(0.031)***	(0.024)	(0.018)***
TransUtComm	0.1757	0.0864	0.0878	0.1674
	(0.024) ***	(0.025)***	(0.018)***	(0.010)***
_Iyear_1995				-0.0653
				(0.008)***
_Iyear_2005				-0.1172
				(0.017)***
Constant	-0.1581	-0.3288	-0.3497	-0.0317
	(0.125)	(0.135)**	(0.090)***	(0.050)
Observations	328	318	282	928
R-squared	0.79	0.76	0.77	0.74

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 8: Oaxaca-Blinder Results at State Level (average weight).

Overall	**1985-2005**	**1985-1995**	**1995-2005**
Difference	-0.0609	-0.0381	-0.0228
	(0.009)***	(0.010)***	(0.008)***
Explained	-0.1063	-0.0386	0.0251
	(0.053)**	(0.023)*	(0.030)
Unexplained	0.0453	-0.0005	-0.0479
	(0.0531)	(0.021)	(0.029)
Explained			
Earnings	-0.0535	-0.0215	0.0399
	(0.047)	(0.019)	(0.026)
Wage-gap	0.0010	0.0031	0.0015
	(0.002)	(0.003)	(0.002)
Blue-collar	-0.0052	-0.0048	0.0002
	(0.008)	(0.008)	(0.001)
Female share	-0.0010	-0.0018	-0.0002
	(0.008)	(0.004)	(0.001)
Minority share	-0.0073	-0.0017	-0.0005
	(0.005)	(0.002)	(0.003)
Urban	0.0002	0.0001	0.0001
	(0.001)	(0.000)	(0.001)
Firm size	0.0024	0.0014	0.0010
	(0.004)	(0.002)	(0.002)
RTW	-0.0008	-0.0005	-0.0001
	(0.001)	(0.001)	(0.006)
No-RTW	-0.0008	-0.0005	-0.0001
	(0.001)	(0.001)	(0.006)
Employer opposition	-0.0175	-0.0069	-0.0038
	(0.007)**	(0.005)	(0.002)
Decertification	0.0003	-0.0004	-0.0001
	(.001)	(0.001)	(0.000)
Activism	-0.0233	-0.0048	-0.0128
	(.006)***	(0.005)	(0.004)***
Unexplained			
Earnings	0.2512	0.1877	-0.0083
	(0.109)**	(0.099)*	(0.025)
Wage-gap	0.0253	0.0349	-0.0132
	(0.023)	(0.026)	(0.021)
Blue-collar	0.0799	0.0170	0.0623
	(0.066)	(0.073)	(0.060)
Female share	0.3437	-0.1244	0.4691
	(0.1675)**	(0.195)	(0.164) ***

Table 8 Continued

Unexplained	**1985-2005**	**1985-1995**	**1995-2005**
Minority share	0.0219	0.0081	0.0072
	(.013)	(0.008)	(0.011)
Urban	0.0072	0.0095	-0.0024
	(0.034)	(0.037)	(0.029)
Firm size	0.0147	0.0009	0.0138
	(0.065)	(0.075)	(0.068)
RTW	0.0028	0.0031	-0.0004
	(0.003)	(0.003)	(0.002)
No-RTW	-0.0036	-0.0043	0.0005
	(0.004)	(0.004)	(0.003)
Employer opposition	0.2429	0.2035	0.0325
	(0.092)***	(0.098)**	(0.068)
Decertification	-0.0028	-0.0028	0.0002
	(0.005)	(0.008)	(0.008)
Activism	0.0007	-0.0156	0.0107
	(0.008)	(0.012)	(0.007)
West	0.0068	0.0004	0.0063
	(0.003)*	(0.003))	(0.003)*
Northeast	0.0025	0.0059	-0.0033
	(0.002)	(0.0034)*	(0.002)
Midwest	-0.0077	-0.0053	-0.0024
	(0.003)**	(0.003)*	(0.002)
South	-0.0027	-0.0040	0.0013
	(0.003)	(0.004)	(0.003)
Constant	-0.9378	-0.3158	-0.6219
	(0.269)***	(0.314)	(0.267)**
Observations	100	100	100

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.10

Table 9: Oaxaca-Blinder Results at State-Industry Level (average weight).

Overall	**1985-2005**	**1985-1995**	**1995-2005**
Difference	-0.0707	-0.0492	-0.0214
	(0.009)***	(0.009)***	(0.008)***
Explained	0.0664	0.0223	0.04673
	(0.029)**	(0.014)	(0.014)***
Unexplained	-0.1372	-0.0716	-0.0682
	(0.027)***	(0.012)***	(0.012)***
Explained			
Earningind	*0.1082*	0.04420	0.0640
	(0.023)***	(0.009)***	(0.011)***
Wage-gapind	-0.0007	-0.0011	0.0009
	(0.001)	(0.001)	(0.001)
Blue-collarind	-0.0184	-0.0140	-0.0039
	(0.007)***	(0.006)**	(0.005)
Female shareind	-0.0003	-0.0021	0.0009
	(0.003)	(0.003)	(0.002)
Minority shareind	-0.0067	-0.0018	-0.0039
	(0.004)	(0.001)	(0.002)
Urban	0.0020	0.0006	0.0009
	(0.001)	(0.001)	(0.001)
Firm size	0.0000	-0.0000	-0.0002
	(0.003)	(0.002)	(0.001)
RTW	-0.0007	-0.0007	-0.0000
	(0.000)	(0.000)	(0.000)
No-RTW	-0.0007	-0.0007	-0.0000
	(0.000)	(0.000)	(0.000)
Employer opposition	-0.0086	-0.0035	-0.0039
	(0.003)**	(0.001)**	(0.001)**
Decertification	0.0005	0.0006	-0.0001
	(.000)	(0.001)	(0.000)
Activism	-0.0190	-0.0043	-0.0134
	(.003)***	(0.001)**	(0.002)***
Construction	-0.0015	-0.0002	-0.0009
	(0.004)	(0.004)	(0.003)
Mining	0.0040	0.0027	0.0014
	(0.001)**	(0.002)	(0.001)
Durable	-0.0000	-0.0000	-0.0000
	(0.000)	(0.000)	(0.000)
Nondurable	-0.0002	0.0002	-0.0003
	(0.001)	(0.001)	(0.001)

Table 9 Continued

Explained	**1985-2005**	**1985-1995**	**1995-2005**
Retail	0.0001	0.0000	0.0001
	(0.001)	(0.001)	(0.002)
Service	0.0034	0.0016	0.0017
	(0.003)	(0.003)	(0.003)
TransUtComm	0.0029	0.0006	0.0016
	(0.004)	(0.004)	(0.003)
Wholesale	0.0016	0.0005	0.0004
	(0.001)	(0.001)	(0.000)
Unexplained			
Earningind	-0.0662	-0.0016	-0.0646
	(0.058)	(0.047)	(0.048)
Wage-gapind	0.0060	0.0106	-0.0052
	(0.007)	(0.007)	(0.007)
Blue-collarind	-0.0162	-0.0196	0.0029
	(0.036)	(0.036)	(0.035)
Female shareind	0.0975	0.0372	0.0610
	(0.038)**	(0.039)	(0.036)*
Minority shareind	0.0162	0.0018	0.0135
	(0.011)	(0.008)	(0.009)
Urban	-0.0286	-0.0169	-0.0112
	(0.028)	(0.028)	(0.025)
Firm size	0.0078	-0.0081	0.0163
	(0.057)	(0.058)	(0.055)
RTW	0.0011	0.0026	-0.0015
	(0.002)	(0.002)	(0.002)
No-RTW	-0.0016	-0.0038	0.0022
	(0.003)	(0.003)	(0.003)
Employer opposition	0.1150	0.0355	0.0783
	(0.071)	(0.072)	(0.060)
Decertification	-0.0002	-0.0018	0.0016
	(0.005)	(0.006)	(0.007)
Activism	0.0163	-0.0030	0.0181
	(0.007)**	(0.009)	(0.007)**
West	0.0077	0.0032	0.0042
	(0.002)***	(0.002))	(0.002)*
Northeast	-0.0020	0.0002	-0.0023
	(0.002)	(0.002)	(0.001)
Midwest	-0.0046	-0.0022	-0.0022
	(0.002)**	(0.002)	(0.002)
South	0.0000	-0.0017	0.0015
	(0.002)	(0.003)	(0.002)

Table 9 Continued

Unexplained	**1985-2005**	**1985-1995**	**1995-2005**
Construction	0.0158	0.0056	0.0099
	(0.005)***	(0.005)	(0.005)**
Mining	-0.0002	-0.0003	-0.0000
	(0.000)	(0.000)	(0.000)
Durable	-0.0030	-0.0016	-0.0014
	(0.002)	(0.002)	(0.002)
Nondurable	-0.0044	-0.0030	-0.0015
	(0.002)*	(0.002)	(0.002)
Retail	0.0077	0.0038	0.0038
	(0.004)*	(0.004)	(0.004)
Service	-0.0137	-0.0008	-0.0128
	(0.006)**	(0.006)	(0.006)**
TransUtComm	-0.0083	-0.0062	-0.0014
	(0.002)***	(0.002)**	(0.002)
Wholesale	0.0038	0.0032	0.0013
	(0.002)**	(0.002)	(0.001)
Constant	-0.2831	-0.1045	-0.1786
	(0.129)**	(0.135)	(0.119)
Observations	100	100	100

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.10

CHAPTER 2

VARIATIONS IN STATE UNION DENSITY IN THE PUBLIC SECTOR: A COMPARISON OF COLORADO AND UTAH

Introduction

The big jump in union membership in the US public sector in the 1960s and 1970s, its uneven growth across states, and its stagnation since the 1980s has led economists to examine public sector unionization and its determinants. The growth in public sector union membership is mostly credited to changes in the public's attitudes towards public sector unionization and adoption of collective bargaining laws by some states since the 1960s (Edwards, 1989; Feuille, 1991). Variations in union density across states and over time are related to the extent of the collective bargaining laws, which greatly varies by states (Freeman, 1988). States with comprehensive collective bargaining laws are more unionized than states without such laws. Although many studies conclude that variations in public sector unionization across states and over time are mostly related to variations in the state's collective bargaining laws, other determinants of public sector union membership have been less examined.

Most studies of the determinants of union density, at least in the discipline of economics, take a quantitative/econometric approach. While these studies have provided us with some insight, some of the phenomena that affect union density are states' specific characteristics that are difficult to quantify. This paper takes another approach: a

comparison of Utah and Colorado, cases chosen because of their substantial similarity, including collective bargaining laws, in terms of the determinants of unionization, combined with their very different histories of change in public sector union density. This paper will explore the causes and consequences of the sea change in public sector unionization between Colorado and Utah for the period of 1983-2008. To the best of our knowledge, this is the first time that such a comparison of public sector union density for these two neighboring states has been conducted.

Literature Review

Public sector unionization in the US jumped from 12.8 percent to 35.9 percent from the early 1960s to the late 1970s. This huge increase in public sector unionization coincided with a large drop in private sector unionization from its peak of 34.9 percent in the mid-1950s to 20.1 percent at the end of the 1970s (Freeman, 1988). A period of stagnation or low growth in public sector unionization began in the 1980s. According to Feuille (1991), these three decades brought dramatic changes to the composition of organized labor, in that public sector union density had surpassed private sector unionization.

Prior to 1962, Wisconsin was the only state that allowed state employees to collectively bargain (Write and Gundersen, 2004). President Kennedy in 1962 signed an Executive Order (10988) allowing federal employees to bargain collectively. The creation of collective bargaining rights for federal employees and other favorable court cases towards collective bargaining inspired many other states to adopt collective bargaining laws for state employees, which resulted in an increase in public sector union membership (Freeman, 1988; Edwards, 1989; and Feuille, 1991). However, not all states

embraced collective bargaining rights for their state employees and some states even prohibit such laws.

Colorado and Utah are among the states that have no public sector collective bargaining laws. However, Utah is a Right-To-Work (RTW) state and Colorado is a non-RTW state. RTW states prohibit the union security clause, which upon collective bargaining agreement between employers and unions requires union membership as a condition of employment.

Figures 5 and 6 show average public sector union density for RTW states, non-RTW states, Colorado, and Utah for the period of 1983-2008. This study starts with 1983 because it marks the year in which the Current Population Survey started to report union data by states. Figure 5 shows that RTW states' unionization in the public sector varies from non-RTW states. Non-RTW states on average have gained union membership, whereas RTW states lost union density for the same period. Figure 6 shows that Colorado and Utah have both lost union density in that period; however, Utah had a much larger decline. At the beginning of the period, Utah had higher unionization in the public sector, but it ended up with a lower union density.

Why do Colorado and Utah have a different history in their public sector unionization profiles, despite having many similarities such as collective bargaining laws, region, and private sector unionization with respect to determinants of public sector unionization? In order to answer this question, this paper will review the determinants of union density in the empirical literature.

Most empirical studies of the determinants of union density, at least in the field of economics, use a reduced form of supply and demand for union services. The theoretical

model underlying previous econometric studies assumes that union density is determined by the interaction of supply and demand for union services, and the density changes with factors that affect the supply and demand relationship. Union membership is assumed to be an asset that brings a flow of services to utility maximizing individuals (Hirsch, 1980). The demand for union services depends negatively on the price of these services and positively on the income (wealth) of the individuals, assuming union services are normal goods. Taste or preference and relative attractiveness of the price of alternatives are also considered on the demand side. The supply of union services positively depends on the price and negatively on the cost of providing such services. Since the price of union services is not observable, empirical studies estimate a reduced form of supply and demand which eliminates the price of union services. Thus, union density is estimated as a function of a set of variables that are expected to determine the location of supply and demand for union services. One difficulty encountered in this approach is that many of the determinants of supply and demand for union services are not directly observable or quantifiable and are therefore measured by proxies.

A set of variables that are frequently used as determinants of union membership across time and space are economic factors, composition of the labor force (Hirsch, 1980), state collective bargaining laws (Ichniowski, 1988), public attitude (Edwards, 1989), employer resistance (Freeman, 1986), and union performance (Bronfenbrenner, 1997).

Determinants of the Public Sector Union Membership

Economic factors

Government expenditure. A growth in demand for government services will result in demand for more public employees and public expenditures. The high growth period in public sector unionization in the 1960s and 1970s in the US coincided with a high growth in state and local government expenditures and employment (Edwards, 1989). A growth in demand for government services can occur in states with higher than average income (GDP by state) growth or changes in demographics. Demand for government services can be on average higher in a state experiencing higher than national average population growth. Public employment growth, due to rapid economic growth of a state, has a positive impact on unionization, because it reduces employer retaliation in the tighter labor market and reflects higher organizing funds and activities for unions (Schnaubel, 2003). Changes in demographics will also impact government services. For example, an aging population in a state will demand more public assistance or states with above average fertility will spend more on education.

Wages. Union wages are included in individual and aggregate level studies of the determinants of union membership as a proxy for wealth or permanent income. As wealth or permanent income increases, the demand for union membership rises, because union services are assumed to be a normal good. Unions are also known to raise wages for their members above those of nonunion employees. Hence, the ability of the unions to raise wages and the effect of higher wages on the levels of unionization led researchers to treat wages as an endogenous variable (Hirsch, 1980).

The composition of the labor-force

Labor-force characteristics such as age, gender, race, and the level of education are determinants of union membership, which differ among employees.

Age. Older employees are expected to be more likely to join unions, because they are more attached to the labor market, less mobile, and have high expectations from unionization on the one hand. On the other hand they may be less inclined to unionize, because of a shorter time period receiving nonpension benefits; therefore, the net effect of age on union density may be minimal (Hirsch, 1980).

Gender. Female employees are less attached to the labor market and the benefits of being a union member may be small for them; therefore, they are expected to affect unionization negatively.

Race. The expected impact of non-White employees on unionization is mixed. On the one hand, their benefit from unionization is greatest and, on the other hand, discrimination by unions may prevent their membership (Hirsch, 1980).

Education. The level of education is found to be negatively related to unionization, because higher education and skills lead to stronger bargaining power and less dependence on unions.

State laws

State governments widely regulate the process of union representation in the private sector as well as the public sector (Freeman, 1988). Comprehensive collective bargaining laws by states for police, firefighters, and teachers are examples of such regulation. States with comprehensive collective bargaining laws reduce costs of organizing and management opposition. For instance, RTW states prohibit unions from

requiring union membership as a condition of employment, hence promoting free riders and increasing collective bargaining costs. Absent any collective bargaining laws, management is not required to bargain with unions, hence making unions ineffective in their efforts.

State bargaining laws are relevant to public sector unionization, because they affect the outcomes in the labor market. For instance, prolabor laws allow unions to achieve more benefits for their members with less cost, because unions need not spend their time and their resources to convince management or legislators to commit to contracts. Colorado and Utah are very similar in their public sector labor laws as evaluated by Valletta and Freeman (1985).

RTW laws reduce unionization due to the free rider problem (Ichniowski and Zax, 1991; Moore 1998). Colorado is a non-RTW state in comparison to Utah; however, the Colorado Labor Peace Act (CLPA), which was enacted in 1943, is a precursor to the Taft-Hartley Act of 1947. The CLPA makes Colorado a modified RTW state (Hogler and Shulman, 1999). One provision of the RTW law allows states to outlaw the union security clause, which requires nonunion members to become union members within a specified period upon employment. CLPA requires unions to conduct a secondary election for establishing a union security clause. A super majority (3/4) of workers voting in the second election or a majority of eligible voters in the unit (whichever is greater) is required to establish a union security clause (Hogler and Shulman, 1999).

Public attitudes

Changes in public attitudes towards unions affect unionization (Lipset, 1986; Edwards, 1989). Public opinion is also influenced by advertising, family, community

standards, and ideology (Albelda et al., 2001). Individual behavior is guided by lifestyle, adage, codes of behavior, which are obtained from family and other institutions such as church (North, 1981). Favorable attitudes may lead to laws that are more union friendly or elections of public managers who commit to collective bargaining contracts, hence reducing union's organizing costs and increasing unionization.

Employer resistance

Public managers are charged with allocating the tax payer's money and providing needed services under budget constraints. Although public sector managers are unlikely to commit unfair labor practices as often as private sector managers do (Freeman, 1986), lack of collective bargaining laws and a majority political party controlling a state's legislation can resist unionization by not committing to any contracts, or blocking the passage of any favorable labor laws which would reduce a union's organizing costs. For example, a Republican majority in a state may push laws that favor business over labor. If union leaders can neither sign any contracts with management nor achieve any benefits for their members, they cannot convince potential members to join the unions.

Union performance

There are three hypotheses with respect to how union performance may have promoted a declining unionization rate (Freeman, 1988). First, unions may have poorly represented their members, which Freeman dismisses due to unions' wage and benefit achievement for their members and polls showing member satisfaction with their unions. Second, unions may not have allocated enough resources to recruit new members, which Freeman finds support for. However, Yates (2009) stated that unions' financial support

for new recruitment has improved since 1995. Third, union performance may have declined due to increasing management opposition towards collective bargaining due to unions' achievement of higher wages compared with nonunion workers, which Freeman again finds support for. In the public sector, union performance not only depends on the union's allocation of resources towards new recruitment, but more importantly it depends on the state's collective bargaining laws and management perception towards unions. Kate Bronfenbrenner (1997) takes up the issue of unions' strategy and states that certain union tactics are useful to win union elections and are important determinants of union organizing success. She demonstrates that a rank-and-file organizing strategy, getting all the members involved, could improve union organizing success. She concludes that if the organizers employ all elements of rank-and-file intensive campaigns, the probability of a successful election would be significantly higher.

Public Sector Unionization in Colorado and Utah

Utah had the biggest drop in public sector union density among all 50 states between 1983 and 2008, whereas Colorado's public sector unionization experienced a much smaller drop for the same period. This study hypothesizes that a decisive majority by the Republican party afforded by a change in public attitudes towards their elected representatives and to a lesser extent a combination of economic and labor force characteristics led to a reduction of public sector union membership in Utah, while Colorado's unionization somewhat followed the national averages.

Figure 7 is a scatter plot of unionization in the public sector in Colorado and Utah over the period of 1983-2008. It shows public-sector union density in Utah was higher (by 6 percentage points) than Colorado's at the beginning of this period and ended lower

(by 6.5 percentage points) than Colorado's at the end of this period. Although union density in the public sector shows considerable volatility year after year due to the CPS's small sample size, the trend in union density (the fitted lines) indicates a steeper decline in Utah's unionization when compared to Colorado's. Figure 7 shows that Colorado's unionization has fluctuated around the 24 percent mark for the entire period, but Utah's density, while showing a similar cyclical pattern, has fallen below the 24 percent level since 1997.

Colorado and Utah experienced a different history in their public sector union density despite many similarities between these two states. One of the determinants of union density in the literature is the location (region) of a state. Economists use US Census regions to control for variations in employee and employer taste towards unions (Hirsch, 1980; Moore and Newman 1988). This proxy is commonly used to capture public attitudes towards unions. For example, it is generally accepted that the Southern region is hostile towards unions. Since Colorado and Utah are in the Mountain region, we can eliminate regional differences as a source of union density variations. However, some differences in public attitudes are not captured by a regional proxy. This issue will be further discussed below.

Another determinant of union density is collective bargaining laws that make Colorado and Utah similar. Both states have overall similar collective bargaining laws for their public sector employees. According to Valletta and Freeman (1988), who constructed an index for collective bargaining between public management and state employees for each state, Utah and Colorado are very similar in their collective bargaining laws. This index includes laws affecting state and local public employees,

where local employees are divided into teachers, firefighters, police, and other locals. I will provide more details on each state's collective bargaining laws in the state laws section. A third similarity between Colorado and Utah is their private sector unionization, which may have an effect on the extent of public sector union density. A heavily unionized private sector can financially support public sector unions in that state (Waters et al., 1994). However, Colorado and Utah both have low private sector union density (below the national average).

Before we compare the determinants of public sector union density between Colorado and Utah and their respective changes over time, I will compare the two states with national averages.

Figures 8 and 9 show that public sector union density on average in the US did not change much, hovering around the 33 percent mark for the period of 1983-2008. Although Colorado followed the national averages with some slight decline, as is shown in Figure 8, Utah deviated sharply from the national averages (Figure 9). Indeed, Utah had the largest decline among all 50 states. This huge decline in Utah's public sector unionization compared to Colorado's and the national averages might be an indication of some important changes in the determinants of union density in Utah rather than in Colorado. However, this paper will examine both states with respect to determinants of union density.

The Current Population Survey (Merged Outgoing Rotation Groups) divides public sector employment into three groups: federal, state, and local. The following scatter plot of union density for Colorado and Utah over the period of 1983-2008 at the federal level (Figure 10) shows that unionization at the federal level is flat with a slight

decline for both states. This means federal employee unionization somewhat follows the national averages. So, the decline must have come from other branches of government and therefore, we do not pursue federal employee union density.

As we further divide government employees in subgroups such as state and local, the volatility of union density increases as sample size decreases. Figure 11 compares state public employees between Colorado and Utah. Obviously, volatility has increased and therefore, we rely on trends to interpret unionization. Unionization among state employees shows a steep decline in both states. Utah's decline is again greater than Colorado's.

Figure 12, however, is very different. The trend in local public union density in Colorado was flat for this period, whereas Utah shows patterns similar to that of state employees' union density. Utah's local union density compared to Colorado's experienced a steep decline. This decline is consistent with other branches of government (except for the federal branch) and Utah's total public sector unionization. This branch of government, which includes teachers, police, firefighters, and other locals, is a big part of the differences between Colorado and Utah for this period. Teachers in particular are a big portion of total local public employees. Therefore, a closer look at teacher unions is warranted here. In the next section, we will examine the above-mentioned determinants of union density as they relate to the public sector and teachers' unions.

Results for Colorado and Utah

Economic conditions during the period of 1983-2008 measured by state and local expenditure per capita and Gross Domestic Product (GDP) per capita are as follows:

Colorado's GDP per capita grew on average by 1.9 percent annually whereas Utah's grew by 2.1 percent. Colorado's public expenditure per capita grew on average by 5 percent whereas Utah's grew by 4.7 percent. These figures show that government in Colorado had more rapid increases in spending per capita than Utah did, in spite of less GDP per capita growth. This is also consistent with Colorado's higher average public wage than Utah's. Colorado's average public wage for this period was $18 per hour whereas Utah's was $16. If we assume union services are normal goods, higher wages lead to higher unionization.

Labor force composition with respect to employment is summarized in Table 10. It shows that from 1983 to 2008, Colorado's population grew on average by 1.84 percent annually whereas Utah's grew by 2.17 percent. State and local employment (excluding federal employees) grew by 2.18 percent annually in Colorado, and 2.84 percent in Utah. These statistics show that Utah's population and state and local employment grew faster than Colorado's for this period. Colorado's state and local employment grew faster than its population as was the case in Utah. If higher employment growth should result in higher union membership due to a tighter labor market and less employer opposition, Utah should have had higher unionization at the end of the period, but it did not.

Differences between the demographic compositions of the labor force in Colorado and in Utah for this period are as follows. Colorado's state and local employees were on average 40.29 years old in 1983 and 43.5 years old in 2008. Utah's state and local public employees were on average 40.65 years old in 1983 and 42.86 years old in 2008. According to these numbers, public employees in Colorado were slightly younger than Utah's public employees in 1983 and slightly older in 2008, which may not have any

significant impact on unionization. Colorado's public employees on average have more college education than Utah's public employees, which should make Colorado's unionization lower in the public sector. Thirty percent of Colorado's public employees had a high school diploma or less in 1983 versus 31 percent for Utah's public employees. However, these figures dropped over time to 17.5 and 22.3 percent in 2008, respectively. Both states have experienced an improvement in public sector employee education; however, Colorado ended up with a more educated public labor force. Colorado's public sector had more non-White workers (25 percent) than Utah's public sector (10 percent) had in 2008. This is an increase from 10 percent for Colorado and 7 percent for Utah in 1983. Although the effect of race on the extent of unionization is mixed in the literature due to discrimination by unions (a negative effect) and minorities gaining great benefits from unionization (a positive effect), in the public sector due to antidiscrimination laws and contract compliance policy, discriminatory effects on unionization may be less than in the private sector, hence boosting unionization in Colorado during this period.

Colorado and Utah, according to an index created by Valletta and Freeman (1988), have similar collective bargaining laws. The index, which varies from a low of 40 to a high of 162, indicates where states lie on a spectrum from no provision for, or prohibition of collective bargaining to comprehensive collective bargaining. Colorado and Utah received 66 and 65, respectively. Although this index was created in 1984, such laws do not change much over time. Colorado and Utah have not changed any of the categories of the collective bargaining laws considered by Valletta and Freeman during this period. However, there have been some changes in dues check off and contributions

to political action committees during this period, which are reported below. For more detailed information on Valletta and Freeman's index see Valletta and Freeman (1988).

Regional differences and voting records of the state representatives to the US Congress in the literature are proxies for public attitudes towards unions. The American Federation of Labor-Congress of Industrial Organization (AFL-CIO) Committee on Political Education (COPE) records each congress member's vote on issues that are important to labor and posts them on their web-site. These records indicate on average, Democrats heavily vote with AFL-CIO positions and Republicans against AFL-CIO positions. Utah voting records at the state level show that Utah residents slightly favored the Republican Party as their representatives over the Democratic Party up until 1980. From 1896 until 1980 Republicans controlled both the state house and the senate 57 percent of the time and Democrats 43 percent (47 years versus 36, and one legislative session was a tie). Although Utah has favored Republican representatives over Democratic, there has never been a time that the Republican Party controlled both houses with such a majority and for such a long time as has occurred since 1980. The longest time before the current dominance was between 1901 and 1915. The underlying reasons for recent Republican dominance in the state of Utah may include the Civil Rights Movement and the Feminist Movement, which were supported in large part by the Democratic Party and were opposed by the Church of Jesus Christ of Latter-day Saints (LDS). Furthermore, the resurgence in the political scene of the Republican Party in 1980 with the election of President Reagan and a Republican governor in 1985 may have contributed to Utahns' sentiment towards the Republican Party in this period. Additionally, the election of Ezra Benson as President of the LDS Church in 1984 might

further have strengthened the Republican Party position in Utah. In the 1950s, 1960s, and 1970s, Utah had a more diverse set of elected representatives than in any other decade. However, this changed in the 1980s as the Republican Party took over both houses by a ratio of 3 to 1. Tables 11 and 12 show the composition of Colorado and Utah's legislators and their party affiliations for the period of 1983-2008.

The following paragraphs briefly touch on the events that led to the super majority control of the government in Utah by the Republican Party since the 1980s.

Religion increasingly plays an important role in US politics since the 1980s. Layman (1997) concluded that there was a considerable change in the impact of religion on political behavior in the US for this period. The Republican Party has positioned itself as the party of choice for cultural conservatism. According to Campbell and Monson (2003), social issues in the past two and half decades have become increasingly significant to the electorate and Mormons as a socially conservative group found themselves more in agreement with Republican Party positions.

Congress passed the Equal Rights Amendment (ERA) in 1972 and sent it to the states for ratification (Crowley, 2006). Thirty eight states were needed to ratify the amendment to the US Constitution. Thirty five states ratified it by 1977. Colorado ratified the ERA in 1972; however, Utah never did. Five states ratified the ERA at first, but rescinded later (Idaho, Kentucky, Nebraska, South Dakota, and Tennessee). Congress extended the deadline to 1982, but the ERA was not ratified by that time (Crowley, 2006). The LDS church leaders announced their opposition to the proposed ERA to the US Constitution in 1976 (The New York Times May 6, 1981).

In 1980, which marks the beginning of a long and significant control of the state's political scene by the Republican Party, President Reagan received the highest percentage vote for a presidential candidate in Utah history. In June of 2004, on the occasion of Reagan's death, The Salt Lake Tribune filed this report for the historical presidential election in Utah.

> Utah's love affair with Ronald Reagan was cemented long before he became the 40th president of the United States in 1981… When Reagan defeated Democratic incumbent Jimmy Carter in 1980, Utah gave him 73 percent of the vote; a 20th-century record that eclipsed the 69 percent Utahns gave Franklin D. Roosevelt in his 1936 landslide….. when Reagan won by such a large margin here, he swept in with him such a horde of Republican state House and Senate candidates that the GOP gained a better than two-thirds, or veto-proof, majority in the Utah Legislature. (The Salt Lake Tribune, June 6, 2004)

Colorado gave Reagan 55 percent of the vote.

Finally, according to a report by The Salt Lake Tribune, when Ezra Taft Benson was elevated to the president of the Quorum of the Twelve Apostles, much of his energy was directed toward warning the LDS about the evils of communism. The paper reported that Benson opposed the civil-rights movement in the mid-1960s and quotes him saying "The so-called civil-rights movement as it exists today is a communist program for revolution in America."

The same article reports that in an interview with The Associated Press, Benson said "It would be impossible to be a liberal Democrat and a good Mormon." (The Salt Lake Tribune, May 31, 1994). Furthermore, in another article, The Salt Lake Tribune reported that

> Today's tea party movement likes to trace its roots back to the 1700s, but the more relevant forebears may be the fervent anti-communists of a half-century ago -- among them, Ezra Taft Benson. The one-time Agriculture secretary, who went on to become the head of The Church of Jesus Christ

> of Latter-day Saints, was a tenacious defender of the John Birch Society and feared that powerful officeholders -- including a U.S. president -- aided the nation's "godless" enemies in undermining the Constitution. (The Salt Lake Tribune, November 13, 2010)

The paper continued with publishing President Benson's letters to FBI director, J. Edgar Hoover, one of which read

> Word has come to me, not yet fully confirmed, that some of our liberal 'soft-on-communist' groups are planning to put pressure on you to come out with a statement against the John Birch Society.

He urged Hoover not to do so.

> It is my conviction that this organization is the most effective non-church group in America against creeping socialism and godless communism. (The Salt Lake Tribune, November 13, 2010)

This dominant role by the Republican Party leads us to the next determinant of union density in the public sector.

Management opposition in the private sector is measured by unfair labor practices (ULP) charged against management by employees and unions in each state. In the public sector, however, unfair labor practices are unlikely (Freeman, 1986). Most ULP charges are due to union organizing drives, strikes, and enforcement of contracts. Management opposition towards unions in the private sector is well documented. Although ULP in the public sector is unlikely, public managers who are opposed to unions, absent any collective bargaining laws, can reduce union influence by not committing to any union contracts or passing laws that hinder union influence.

The Republican Party has a long history of siding with management rather than unions. For example, President Eisenhower in 1953 was the first Republican president to appoint two persons from a management background to the National Labor Relation Board (NLRB) and broke with the tradition of nonpartisan appointments of the board

members (Flynn, 2000). The NLRB is supposed to be an independent, nonpartisan board created to protect public interests. It is charged with conducting elections for certification and decertification of collective bargaining units and processing unfair labor practices by employers as well as unions. The five board members are appointed by the president and are confirmed by the senate for a 5-year term. A study of voting behavior of the NLRB members on unfair labor practices during the Eisenhower, Nixon, and Kennedy-Johnson administrations shows that the Democrats preferred a prolabor voting board and the Republicans desired a prolabor minority on the board (Delorme et al., 1981). A review of board member decision making and interpretation of the National Labor Relations Act on similar cases shows that board members from each party ruled differently on the same subject and the board members admitted that the NLRB is a "political animal" (Gross, 1985). Table 13 (a reproduction of two tables in Joan Flynn, 2000) indicates board members rulings for different administrations.

The AFL-CIO tracks the voting record of state representatives to the US Congress (Table 14). Each Congress member votes on varying issues that can impact labor laws or labor-management relations. The AFL-CIO expresses its preference on each issue and keeps a record of each political party member's votes. Table 14 shows Republicans voting overwhelmingly against the AFL-CIO position.

Over two-third majorities of both the House of Representative and Senate in Utah over this period were controlled by Republicans. The Republican Party controlled the governorship as well. Colorado's unions had their own share of difficulties with Republicans in that state; however, Colorado's Republicans did not control two branches of government for the most part as in Utah, and did not enjoy the same level of control.

These two neighboring states elected more Republican representatives at the state level than they did Democratic representatives in this period. However, Utah on average had more Republican representatives than Colorado did. For example, during the period of 1983-2008 Republicans on average controlled more than 70 percent of both the House and the Senate in Utah, and they have controlled the governorship since 1985. Colorado on average has also had a Republican majority, however, less than two thirds during this period, and the Republicans lost their majority in 2005. Colorado has also had a Democratic governor since 1975 except for the period of 1999-2006.

Unions' performance in the public sector as in the private sector partly depends on employer's perceptions of unions, labor laws, and unions' instrumentality such as members and nonmembers perceptions of the unions leaders. In the public sector, unions are perceived to be effective and instrumental by union as well as nonunion members (Kochan, 1979). However, if unions believe that their efforts will not produce any results in a hostile environment, they may be reluctant to engage in organizing drives and allocate their resources towards organizing drives. It is difficult to compare union organizers and their effectiveness in recruiting new members between Colorado and Utah. The statistics show that Colorado's unions were more successful in keeping their level of union density than Utah's unions. However, Utah's unions had to deal with a more Republican majority in all three branches of government than Colorado's union did. This will lead us to summarize the above results for these two states.

The changes in economic factors, the composition of the labor force, and union performance may have affected the variations in the public sector union membership rate between Colorado and Utah over the period of 1983-2008. However, a change in the

public attitudes in Utah due to political events unrelated to collective bargaining and unionization pulled Utah's electorate towards the Republican Party and caused a decline in Utah's public sector union density.

Since the1980s, the Republican Party not only has controlled both the House and the Senate by a big margin in Utah, but it has also controlled Utah's governorship since 1985. Colorado's political scene is similar to Utah's, however Colorado's Republicans never enjoyed the same levels of confidence and control during the same period. Republicans in general are probusiness and Democrats lean more towards labor. The voting records of congressional members representing states (COPE), NLRB member voting records (table 14), and historical records of the Republican and Democratic Parties are evidence for the above claims. The influence of this difference in political control, and its impact on unions, can be seen in the history of the paycheck deduction legislation in the two states.

Teacher Unions and the "Paycheck Deduction Act"

In 2001, Republican legislators in Utah passed the "Voluntary Contributions Act" which prohibits public employees from authorizing payroll deductions to a labor organization's political fund (http://www.utahsbr.edu/new05d_2001.html). A similar bill has been repeatedly introduced in Colorado, but never passed both houses of the legislature. The introduction of House Bill 179 by representative Chad E. Bennion (R, Murray) angered public employee representatives and forced them to take action against the act in the court. The Salt Lake Tribune reported that the Utah Public Employees Association asserted in a lawsuit that House Bill 179, introduced during the 2001 session:

> curtailing political donations by public employees is a punitive attempt by Utah lawmakers to silence the opposition and is unconstitutional. (Salt Lake Tribune Apr 18, 2001.

After 5 years of court battle between unions' representatives and state' representatives, the Salt Lake Tribune reported that:

> A five-year-old Utah law that has slashed the political clout of the schoolteachers' union has been struck down and a US district judge ruled that "the law is an unconstitutional restriction on free speech." (Salt Lake Tribune May 4, 2006)

What was more interesting in that report was what was going on behind the scenes and the political motives of the legislators to defend a law that they knew would not hold up in a court of law.

> In 2001, Utah lawmakers approved the Voluntary Contribution Act, sponsored by former Murray Rep. Chad Bennion, on a wave of anti- union sentiment. Officially, the legislation was defended as a legitimate effort to protect government from the cost and hassle of setting aside money from public employees' paychecks that would be used for political purposes. But a partisan bent to the vote and behind-the-scenes arm- twisting suggested a more political motive. Legislative attorneys gave the bill a 60 percent chance of being upheld in court. And Utah Attorney General Mark Shurtleff stood on the floor of the House and said he had a "gut feeling" the legislation was unconstitutional. But a few days later, after private discussions with legislative leaders, Shurtleff said the law would be "100 percent defensible." Despite his change of mind, lawmakers pressured the attorney general to hire a private law firm to defend the law. (Salt Lake Tribune May 4, 2006)

According to a report by Sheena McFarland, the lawsuit is still ongoing.

> The issue: In 2001, the Utah Legislature passed the so-called "Paycheck Protection Act," barring public employees unions from collecting money through payroll deductions for political activity.
>
> * The history: The Utah Education Association challenged the law as a violation of free speech rights. The union prevailed in the district court and the 10th Circuit Court of Appeals. But now the U.S. Supreme Court has decided to hear a similar case out of Idaho."
>
> * What's next: The Utah Attorney General's Office and the UEA will file friend-of-the-court briefs with the nation's highest court. A ruling is not

> expected before the fall and could come as late as next spring. (Salt Lake Tribune May 15, 2008)[8]

A similar bill (paycheck deduction for political purposes) has been introduced by Republican legislators in Colorado repeatedly since 1992 and was defeated every time. According to The Denver Post:

> In 1992, then state Sen. Bill Owens, R-Arapahoe County, sponsored a bill to prevent automatic payroll deductions for political purposes. It didn't pass. Similar measures have been introduced nearly every year since, but partly because of a threatened veto by former Gov. Roy Romer, they have mostly been approved in one house only to be killed in the other. The teachers' union has been using the payroll checkoff plan since 1992. A $ 1 a month deduction is made for each covered teacher unless that teacher takes advantage of very narrow opportunities to opt out. The modest expense of making the actual payroll deduction falls to the school districts.When critics first questioned this practice and argued that school districts had no right to spend taxpayer money in furtherance of the union's political agenda, then-Attorney General Gale Norton was asked to issue a legal opinion. In October 1993, she advised that the checkoff program was legal in that it arose from collective bargaining agreements. That opinion made it clear that if the deductions were to be halted it would have to be through legislative action. (The Denver Post February 4, 1999)

Public employee representatives such as teacher unions use the money received from political contributions to promote laws and regulations that benefit their members. Absent any comprehensive collective bargaining laws in a state, the fund is a source of power for unions to fight bills such as House Bill 179 or other related bills such as a public-funded private school voucher program in Utah. The New York Times reported that Utah's legislature (controlled by Republicans) narrowly adopted a voucher program in February of 2007, which was opposed by teacher unions, the National PTA and the

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[8] "A U.S. Supreme Court decision Tuesday validates a Utah law involving government employees and automatic payroll deductions, a measure that has been on hold several years since it passed in the 2001 legislative session." (Deseret News Feb 25, 2009).

N.A.A.C.P., who believed the voucher program would harm public schools (The New York Times May 15, 2007).

The voucher plan was not only opposed by unions and other organizations, but it also was opposed by the public. Utah's public schools are already underfunded due to the state's rapid population growth. According to the Utah State Office of Education (fingertip facts) for 2006, Utah ranked last among all states in per pupil spending. Utah's teachers received on average $40,000 salary compared to a $47,700 national average salary. Utah's average classroom was at 22 students compared to 16 students for the nation. According to Colorado's Department of Education, the average teacher's salary in that state was $46,000 in 2006 and the average classroom size was 17 students. Colorado's data are similar to the national averages. These statistics, and concerns that voucher programs would worsen them, may have been on voters' minds when they rejected the bill on a referendum vote. The Salt Lake Tribune reported that

> Not only did the voucher plan fail in every one of Utah's 29 counties, but an analysis by The Salt Lake Tribune shows it failed in nearly every district represented by the most ardent supporters of the voucher movement, in some cases by resounding margins. (Salt Lake Tribune NOV 13, 2007)

A similar voucher plan was defeated twice in Colorado (1992 and 1994); however, in 2003, a limited voucher bill passed both Republican controlled houses and was signed by the Republican governor Bill Owens. The bill was a 3-year pilot program, which was supposed to take effect in fall 2004. A lawsuit by many organizations, including the Colorado Education Association, was filed against the bill in Colorado's district court. The district Judge declared the bill unconstitutional, which was upheld by

the Colorado Supreme court before it took effect. The following are some excerpts from The Denver Post before and after the passage of the limited voucher program.

> Bill Owens signed the country's largest school voucher bill Wednesday, delighting flag-waving students and sparking talk of lawsuits from opposition groups. Colorado voters twice rejected two private-school ballot measures. But Republicans, who control both legislative houses, say vouchers give parents more of a say over where they can send their kids to school. It is a pilot program, limited to no more than 1 percent of a participating school district's eligible enrollment in the 2004- 2005 school year. Enrollment is capped at 6 percent by the 2007- 2008 school year, when the program is reviewed. (The Denver Post April 17, 2003)
>
> The Colorado Supreme Court on Monday ruled that the state's voucher program unconstitutionally strips school boards of local control. Gov. Bill Owens signed the Colorado Opportunity Contract Pilot Program into law in 2003. It provides tuition vouchers to low- income students in 11 poorly performing districts. Under the program, eligible students would have received a voucher for up to about $5,000 toward tuition at a private school, said Lisa Knepper, spokeswoman for the Institute for Justice. The program was scheduled to begin this fall, but Denver District Judge Joseph E. Meyer III ruled in December that it unconstitutionally usurps local school boards' control over instruction. (The Denver Post June 29, 2004)

The voucher plan passed in Colorado, also by Republicans, was different than the voucher plan in Utah. It was a limited pilot program for a limited number of students, who were poor and were in underperforming public schools. This plan might have been designed to help specific students and not to undermine public schools and the teacher's union in that state. Utah's plan was a statewide plan and included all students, whose parents wished to use public funds in the private schools. This plan might have been designed to promote private schools and undermine public schools and teacher unions.

The voucher plan is one way to privatize education in a state and also minimize unions' influence in the public sector. Conservative organizations such as the Heritage Foundation and the American Legislative Exchange Council are especially active in the political arena and providing models for privatizing public schools (Laitsch, 1998). The

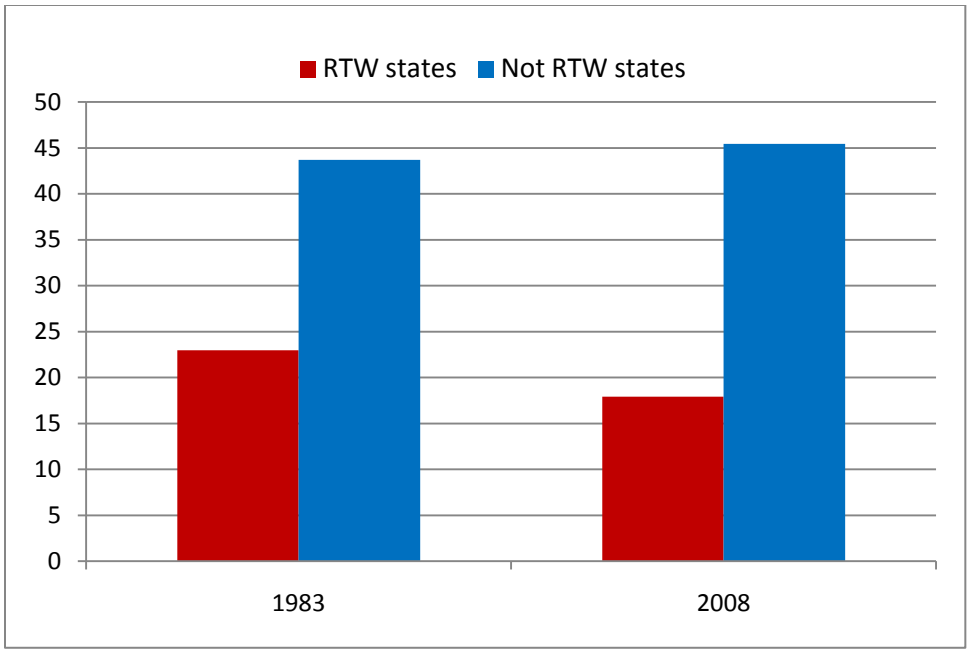
American Federation of Teachers and the National Education Association (NEA) are among those organizations which oppose privatizing public schools. According to Laitsch (1998), in Colorado, the debate over the Colorado Tax Credit Ballot Initiative, which was intended to provide a significant tax credit to parents of students attending private schools, is similar to the debate in Utah and Arizona between supporters and opponent of tax credits. The supporters are fighting the education monopoly of the NEA and the opponents stating that the voucher plan will devastate public education.

The effects of the Voluntary Contribution Act of 2001, the voucher plan, and constant attempts to weaken unions by Republican representatives are visible in the union density of teachers, who compose a large share of local public employees in these states. Teachers on average account for 36 percent of the local government employment in Utah and 28 percent of the local government in Colorado. CPS data, due to small sample sizes for teachers and other local employees, show volatility in employment and union membership. However, we can draw some conclusions from the trend in teacher employment, union membership, and union density. Although education is a part of overall state and local government employment, it is used here as an example of a wider phenomenon, not the sole or a unique locus of union decline, and suggests that these general political trends probably had more widespread effects. Teacher unions in Colorado and Utah have experienced decline during this period. However, the teacher's union in Colorado gained some membership on net whereas Utah's stayed flat. The Figures 13, 14, and 15 compare teacher employment, union membership, and union density between Colorado and Utah for the period of 1983-2008.

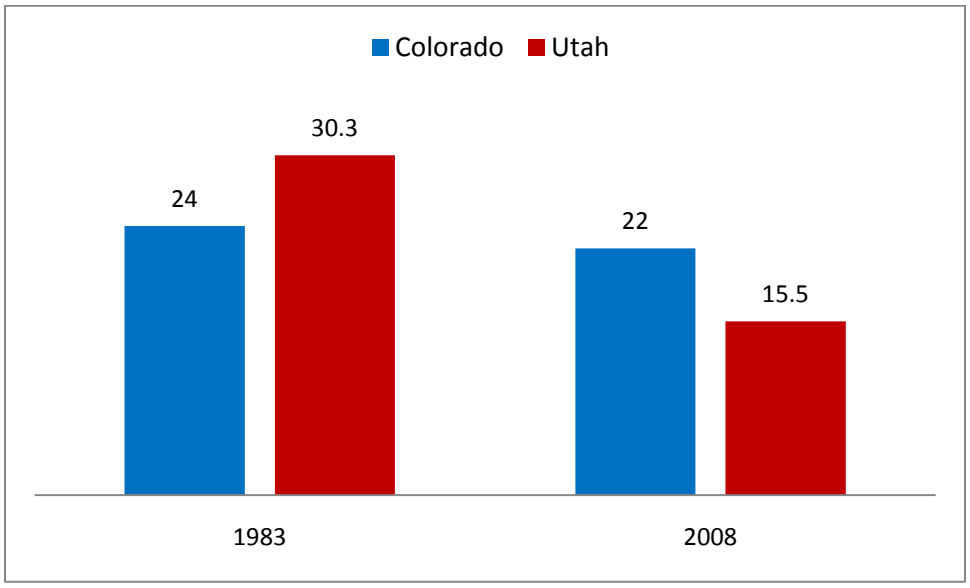
Employment of public sector teachers (K-12) in Colorado and Utah obviously shows an increase in this period. However, the union membership trends among these groups of teachers differ in these two states. Colorado shows a positive trend and Utah a flat to slightly negative trend. The trends in union density for teachers in both states are negative. However, Utah's teacher union density shows the same steep decline as Utah's public sector union density as a whole and Colorado's follows the same flat path with slight decline as Colorado's public sector, which is similar to national public sector union density.

Conclusion

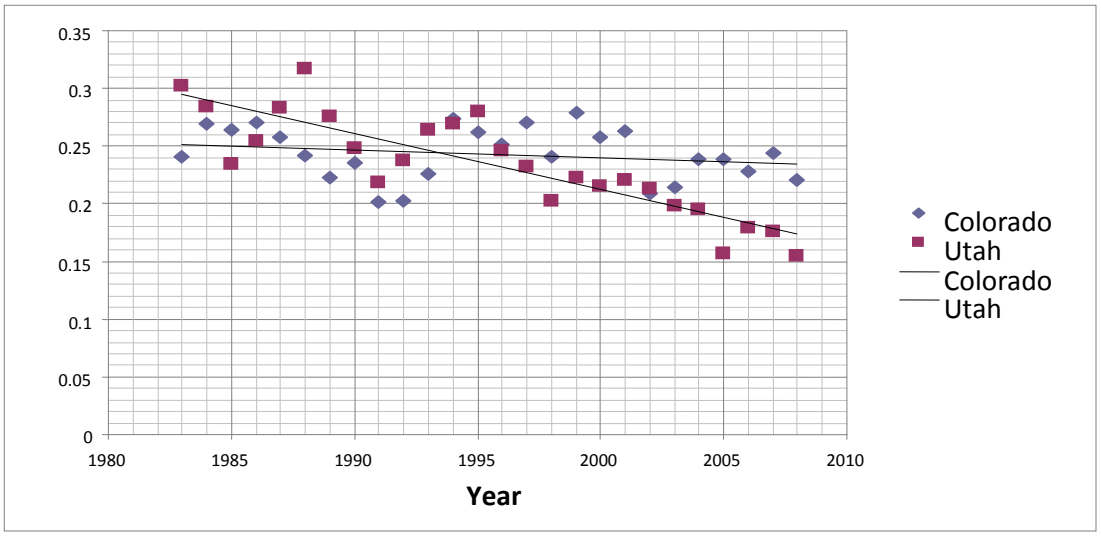
In this study, a comparison of Colorado and Utah was chosen because of these states' similarities in terms of many of the determinants of unionization, combined with their very different histories of change in public sector union density. Our data from CPS show that Utah had an unusually large decline in public sector union density (the largest decline among the 50 states), while Colorado's unionization followed the national averages. Factors that have led to the decline in public sector union membership in Utah, which was higher than Colorado at the beginning of the study period and lower at the end, were to a lesser extent due to economic factors, composition of the labor force, and union activities. More importantly, the decline in the public sector union density in Utah compared with Colorado was due to changes in political climate, which led to a super majority control of government by the Republican Party in that state. Republicans positioned themselves as the party of conservatism and Mormons, a socially conservative group, found themselves in agreement with Republican positions. This in turn led to greater management resistance towards unions, which led to lower unionization in Utah.



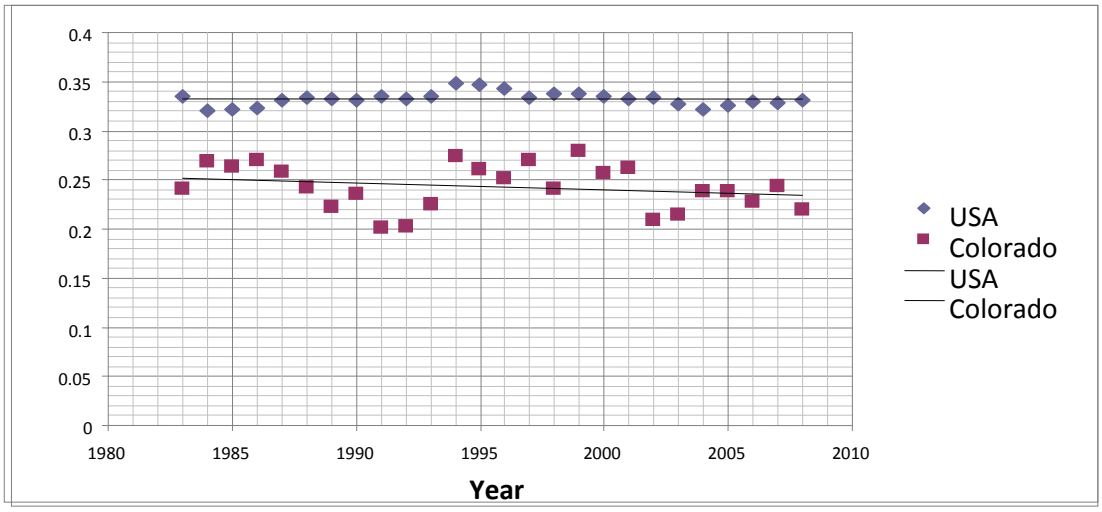
Data Source: Derived from Current Population Survey
Figure 5: Average Public Unionization in RTW and Non-RTW States for 1983 and 2008



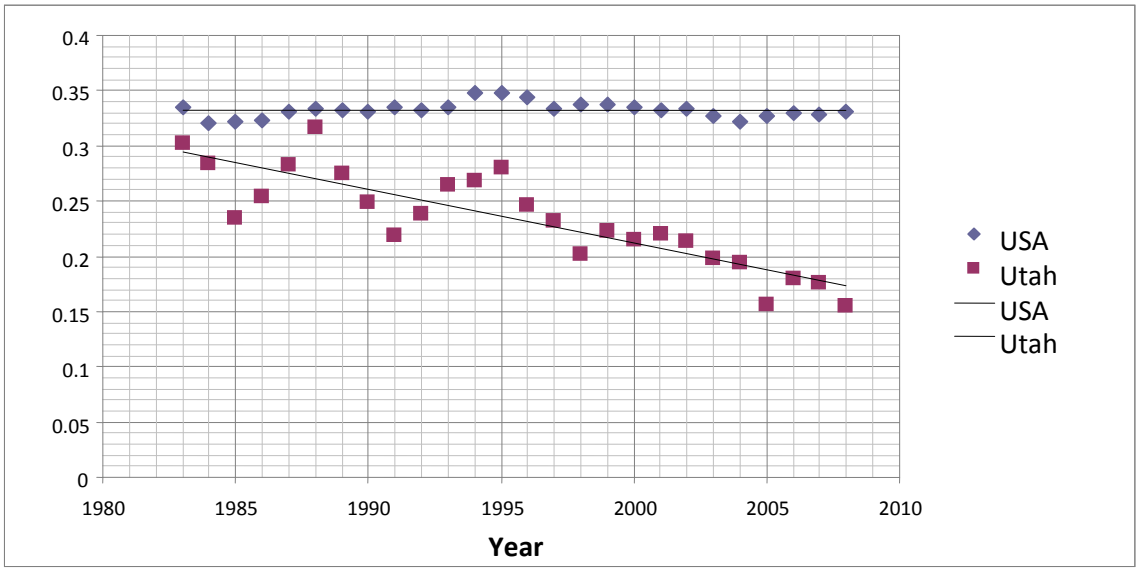
Data Source: Derived from Current Population Survey
Figure 6: Public Sector Union Density for Colorado and Utah 1983 and 2008



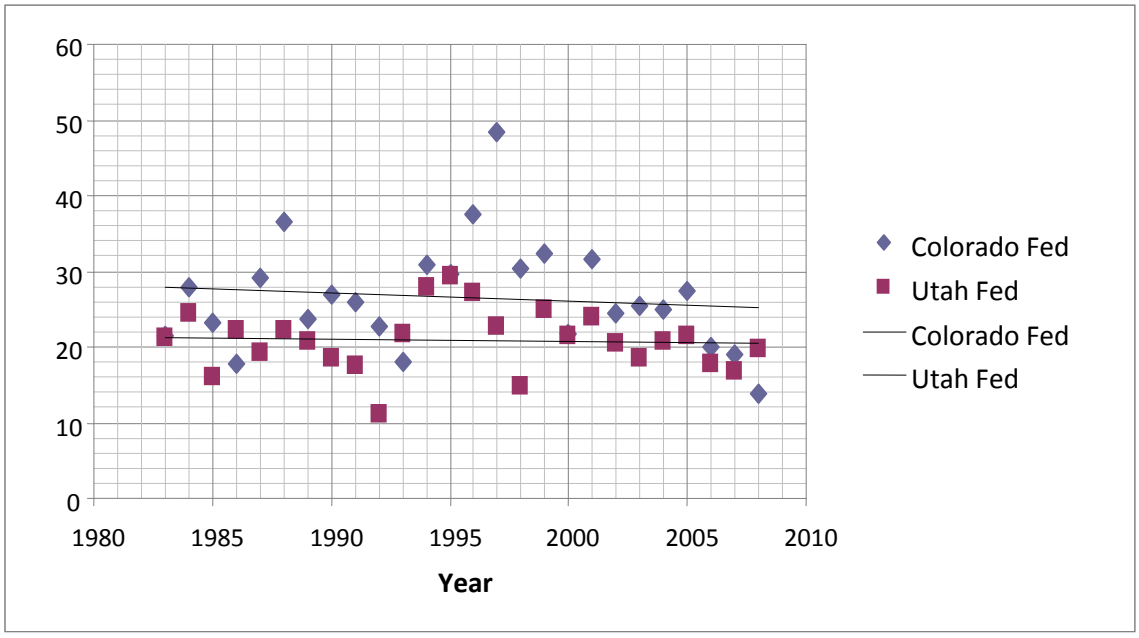
Data source: Barry T. Hirsch and David A. Mcpherson
Figure 7: Public Sector Unionization in Colorado and Utah 1983-2008



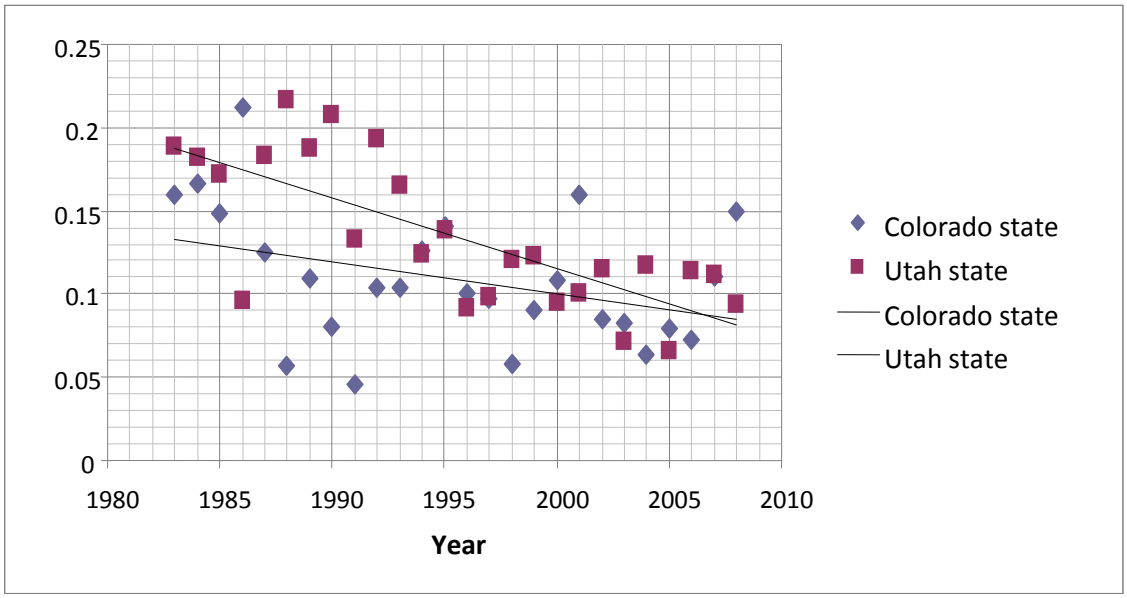
Data source: Barry T. Hirsch and David A. Mcpherson
Figure 8: Public Sector Union Density in Colorado and US 1983-2008



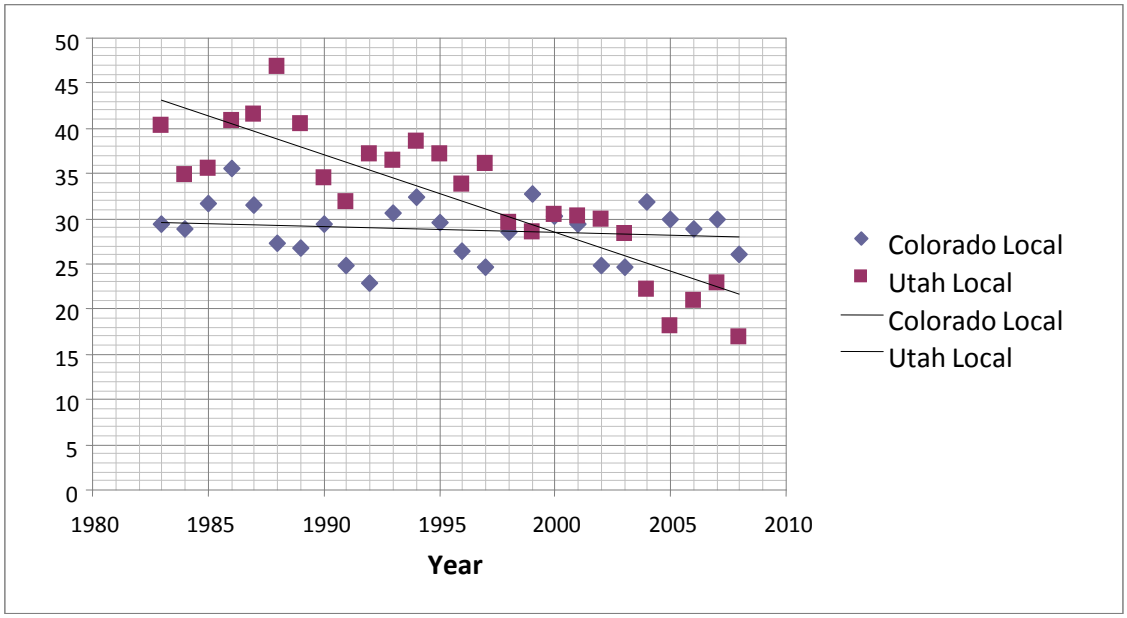
Data source: Barry T. Hirsch and David A. Mcpherson
Figure 9: Public Sector Union Density in Utah and US 1983-2008



Data source: US Census Bureau "Current population survey"
Figure 10: Federal Employee's Union Density in Colorado and Utah 1983-2008



Data source: US Census Bureau "Current population survey"
Figure 11: State Public Employee's Union Density in Colorado and Utah 1983-2008



Data source: US Census Bureau "Current population survey"
Figure 12: Local Public Employee's Union Density for Colorado and Utah 1983-2008

Table 10: Annual Percentage Growth Rate in Population and Employment for Colorado and Utah 1983-2008

State	Population growth	Total state employment growth	Total public sector employment growth	State and local employment growth
Colorado	1.84	2.22	1.84	2.18
Utah	2.17	3.00	3.04	2.84

Data Source: US Census Bureau "Current Population Survey"

Table11: History of Colorado's Legislature

Year	Senate	Control	House	Control
1983	21-14	R	40-25	R
1985	24-11	R	47-18	R
1987	25-10	R	40-25	R
1989	24-11	R	39-26	R
1991	23--12	R	38-27	R
1993	19-16	R	34-31	R
1995	19-16	R	41-24	R
1997	20-15	R	41-24	R
1999	20-15	R	40-25	R
2001	17-18	D	38-27	R
2003	18-17	R	37-28	R
2005	17-18	D	30-35	D
2007	15-20	D	26-39	D
2009	15-20	D	25-40	D

Data Source: Richard Poll and House and Senate journals

Table12: History of Utah's Legislature

Year	Senate	Control	House	Control
1983	24-5	R	58-17	R
1985	23-6	R	61-14	R
1987	21-8	R	48-27	R
1989	22-7	R	48-27	R
1991	19-10	R	44-31	R
1993	18-11	R	49-26	R
1995	19-10	R	55-20	R
1997	20-9	R	55-20	R
1999	18-11	R	54-21	R
2001	20-9	R	51-24	R
2003	22-7	R	56-19	R
2005	21-8	R	56-19	R
2007	21-8	R	55-20	R
2009	21-8	R	53-22	R

Data Source: Library of Colorado legislature

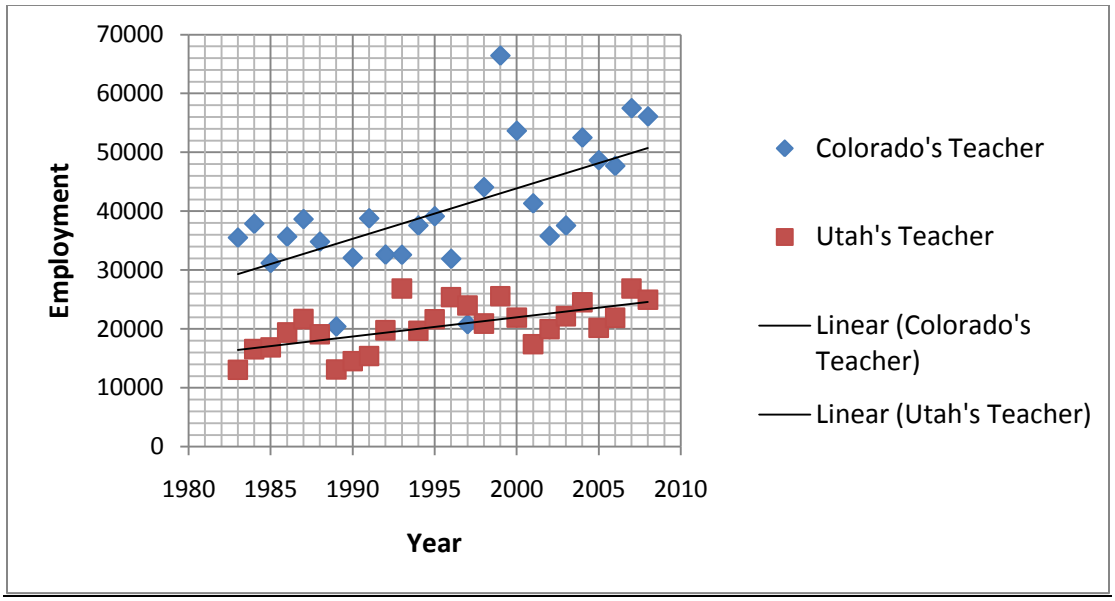
Table 13: NLRB Board Members Voting on ULP
Reproduced with permission from Flynn (2000)

Member	Bkgrd	Votes	Party	President
R. Kennedy (1971-75)	Govt.	79% Pro-M	Rep.	Nixon
Walther (1971-77)	Mgt.	75% Pro-M	Rep.	Ford
Miller (1971-74)	Mgt.	64% Pro-M	Rep.	Nixon
Beeson (Mar.-Dec. 54)	Mgt.	63% Pro-M	Rep.	Eisenhower
Rogder (1953-61)	Govt.	61% Pro-M	Rep.	Eisenhower
Farmer (1953-55)	Mgt.	56% Pro-M	Ind.	Eisenhower
Leedom (1955-64)	Govt.	56% Pro-M	Rep	Eisenhower
Pennello (1972-79)	Govt.	53% Pro-M	Dem.	Nixon
Bean (1955-60)	Govt.	53% Pro-M	Rep.	Eisenhower
Murphy (1975-79)	Mgt./Union	54% Pro-U	Rep.	Ford
J. Jenkins (1957-61)	Mgt.	54% Pro-U	Dem.	Eisenhower
McCulloch (1961-70)	Govt.	56% Pro-U	Dem.	Kennedy
Zagoria (1961-71)	Govt.	57% Pro-U	Dem.	Johnson
H. Jenkins (1965-79)	Acad./Govt.	61% Pro-U	Rep.	Kennedy
Brown (1961-71)	Govt.	62% Pro-U	Dem.	Kennedy
Truesdale (1978-79)	Govt.	63% Pro-U	Dem.	Carter
Peterson (1955-56)	Govt.	63% Pro-U	Dem.	Truman
Fanning (1957-79)	Govt.	71% Pro-U	Dem.	Eisenhower
Murdock (1955-57)	Govt.	71% Pro-U	Rep.	Truman
Dotson (1983-87)	Mgt.	97% Pro-M	Rep.	Reagan
Hurtgen (1997-2002)	Mgt.	97% Pro-M	Rep.	Reagan
Brame (1997-2000)	Mgt.	90% Pro-M	Rep.	Clinton
Cohen (1994-96)	Mgt.	88% Pro-M	Rep.	Clinton
Oviatt (1990-93)	Mgt.	76% Pro-M	Rep.	Bush
Raudabaugh (1990-93)	Mgt.	65% Pro-M	Rep.	Bush
Higgins (1988-89:96-97)	Mgt.	59% Pro-M	Rep.	Reagan/Clinton
Stephens (1985-95)	Govt.	56% Pro-U	Rep.	Reagan
Cracraft (1986-91)	Mgt.	62% Pro-U	Dem.	Reagan
Johansen (1986-89)	Govt.	70% Pro-U	Rep.	Reagan
Truesdale (1994-96)	Govt.	72% Pro-U	Dem.	Clinton
Devaney (1988-94)	Govt.	73% Pro-U	Dem.	Reagan
Babson (1985-88)	Mgt.	73% Pro-U	Dem.	Reagan
Gould (1994-98)	Acad.	78% Pro-U	Dem.	Clinton
Dennis (1983-86)	Mgt.	90% Pro-U	Dem.	Reagan
Fox (1995-2000)	Union	91% Pro-U	Dem.	Clinton
Liebman (1997-)	Union	92% Pro-U	Dem.	Clinton
Browning (1994-97)	Union	98% Pro-U	Dem.	Clinton

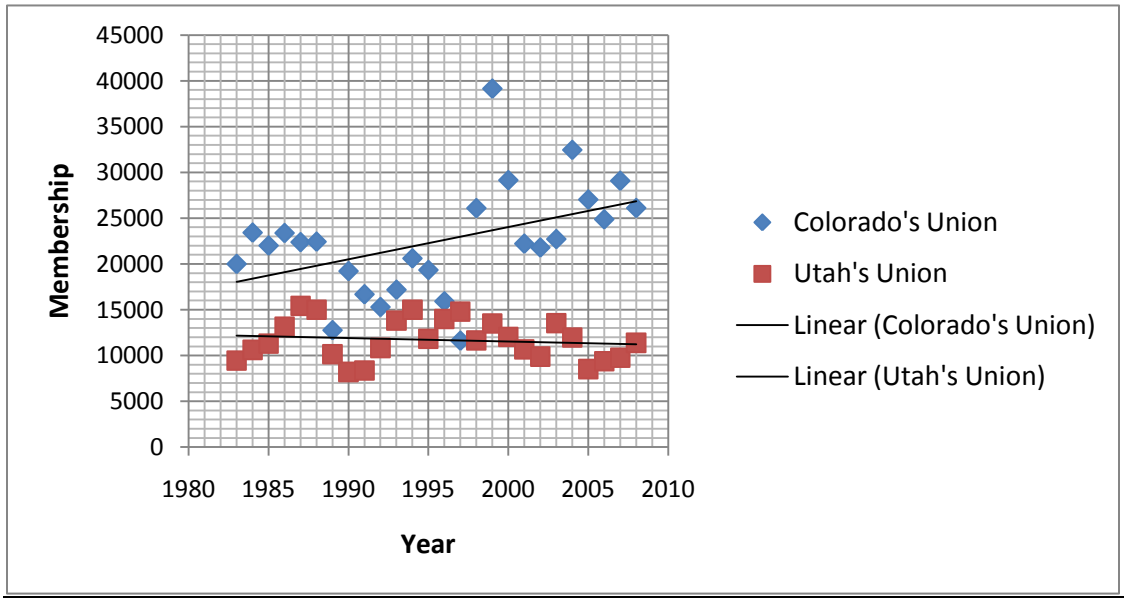
Table 14: State Representative to the U.S. House Life-Time Voting in Support of AFL-CIO Position (2008)

Life-time average percentage voting in support of AFL-CIO position

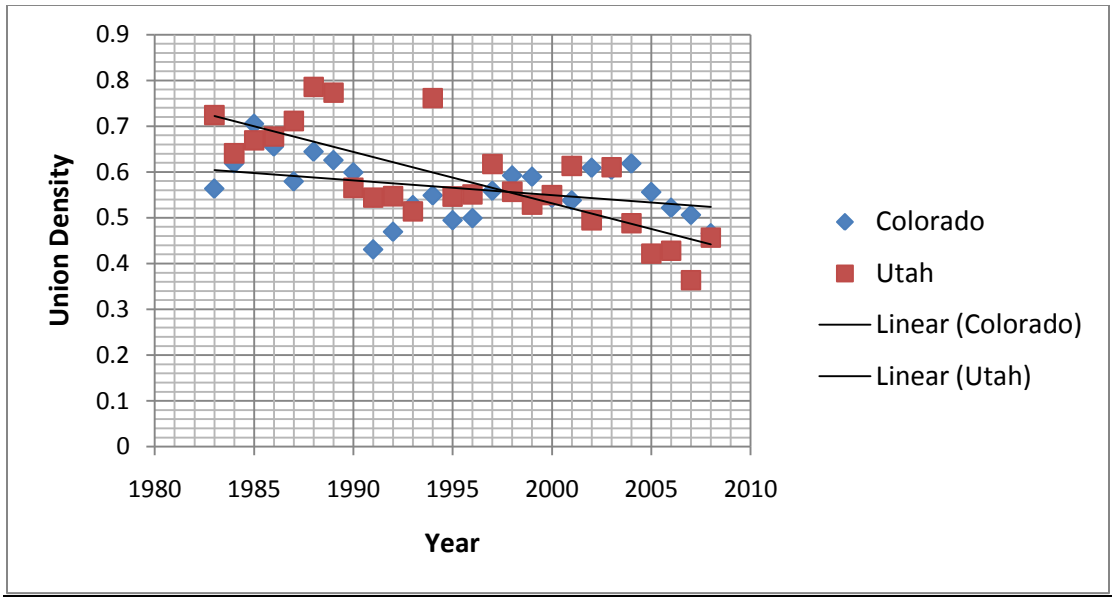
State	Republican	Democrat	State	Republican	Democrat
Alabama	16.2	79	Montana	23	N
Alaska	42	N	Nebraska	13	N
Arizona	12	92.25	Nevada	30	93
Arkansas	14	88	New Hampshire	N	97
California	10.5	94	New Jersey	35.67	95.4
Colorado	8.7	92.75	New Mexico	19.5	97
Connecticut	45	96.5	New York	35.17	95.5
Delaware	33	N	North Carolina	15.67	90.6
Florida	18	93	North Dakota	N	88
Georgia	8	88.7	Ohio	19.5	97
Hawaii	N	98	Oklahoma	10.75	62
Idaho	10	N	Oregon	24	92
Illinois	26.75	94.3	Pennsylvania	30.88	95.5
Indiana	12.75	90.8	Rhode Island	N	97.5
Iowa	10.5	93.3	South Carolina	9.5	89
Kansas	15	87	South Dakota	N	86
Kentucky	17.75	94	Tennessee	12.25	81.6
Louisiana	16.25	93.67	Texas	10.11	90
Maine	N	96	Utah	9.5	68
Maryland	19.5	96.67	Vermont	N	97
Massachusetts	N	96.7	Virginia	17.13	89.33
Michigan	21.78	95.8	Washington	23	89
Minnesota	13.67	91.6	West Virginia	48	94
Mississippi	14	78.67	Wisconsin	15.67	94
Missouri	18.6	91	Wyoming	8	N



Data source: US Census Bureau "Current population survey"
Figure 13: Employment in K-12 in Colorado and Utah 1983-2008



Data source: US Census Bureau "Current population survey"
Figure 14: Union Membership K-12 in Colorado and Utah 1983-2008



Data source: US Census Bureau "Current population survey"
Figure 15: Union Density K-12 in Colorado and Utah 1983-2008

CHAPTER 3

VOTING RECORDS OF THE NATIONAL LABOR RELATIONS BOARD MEMBERS ON UNFAIR LABOR PRACTICE CASES, 1993-2008

Introduction

National Labor Relations Board (NLRB) members are subjected to criticism by both employers and unions for their voting decisions on Unfair Labor Practice (ULP) cases. Empirical studies show that NLRB members who are members of the Democratic Party are more likely to vote in favor of unions while board members from the Republican Party are more inclined to vote promanagement (Delorme et al., 1981; Cooke and Gautschi, 1982; Cooke et al., 1995). These studies used data from the period between 1955 and 1986. However, there is a body of evidence that indicates that voting behavior of NLRB members may have been more tilted towards union or employer since the 1980s than ever before, due to changes in the process of board members' nominations (Flynn, 2000; Tope and Jacobs, 2009).

The NLRB not only decides on ULP cases, but also oversees union organizing elections. If the NLRB favors one group over another depending on which political party has the control of the board, it could impact the level of union density. According to Tope and Jacobs (2009), unions' ability to grow by organizing new firms through the NLRB is

sharply curtailed when Republicans control the presidency, NLRB, and the congressional oversight subcommittee, which supervises the NLRB. A change in the level of union memberships, in turn, has an impact on market outcomes. The level of trade union membership determines the extent of action a trade union enjoys, the union's capability for financial and organizational survival, the ability to influence employers, and its likelihood of being heard by the general public (Riley, 1997).

This paper revisits the voting behavior of NLRB members over the 1993-2008 periods. Similar to Delorme et al. (1981) and Cooke and Gautschi (1982), it will explore the relationship between a set of ideological, economic, and public opinion variables and board members' voting decisions. Its contributions to the literature are two-fold. First, it uses data for the period of 1993-2008, a period during which there were major transformations in labor management relations, but which have not been analyzed in this context before. Second, it will introduce several new variables to capture the impact of changes in the board nominee confirmation process that have taken place since the 1980s. Board members' ideology and background increasingly became more relevant in the selection phase and confirmation stage after the 1980s. Also, disagreement between the sitting president and the Senate on some board nominees became routine. According to Flynn (2000) strongly ideological candidates were recommended by unions/employers or selected by presidents, while more moderate candidates encountered serious opposition in the Senate. Another change in the process of NLRB nominations is the issue of the recess appointments. Recess appointments occurred when the president and the Senate disagreed on a board nominee. The president can appoint a nominee to the board,

bypassing the Senate, when Congress is adjourned. There were nine recess appointments in the 1980s, 15 in the 1990s and 29 in the 2000s (www.nlrb.gov).

Literature Review

There are three issues that make the NLRB a focus for criticism by employers and unions. These are the conflicting congressional intent in the acts, the vague language of the acts, and consequently the conflicting interpretations of the laws by the NLRB's members. Previous studies have explored these issues for earlier periods (Gross, 1985; Flynn, 2000).

The NLRB is the governing body of the National Labor Relations Act (NLRA), which was passed by Congress in 1935, and is in charge of administering its laws. The NLRA, also known as the Wagner Act, was intended to bring a balance between workers and employers and was projected to resolve labor relations problems through a system of self-government (Gross, 1985). In 1947, Congress passed the Labor Management Relations Act (LMRA) also known as the Taft-Hartley Act. This act, although recognizing the Wagner Act as promoting collective bargaining, amended the act by prohibiting certain practices of unions, which would harm interstate commerce. In addition to the amendment of a union's unfair labor practices, the Taft-Hartley Act gave employers the same right (free speech) as employees (free choice and individual rights). Gross (1985) states that the Taft-Hartley Act "contains conflicting statements of purpose that open the national labor law to conflicting interpretations of congressional intent." To sum it up, the Wagner Act promotes collective bargaining, while the Taft-Hartley Act promotes free choice and individual rights, which leads to different interpretations of congressional intent.

In addition to conflicting congressional intent, the language of the NLRA is vague and leaves gaps in the statutory language that make it difficult to determine congressional intent, which are an invitation to varying interpretations by board members who must fill in the gaps. Gross (1985) states that a more disturbing criticism of the NLRB is its frequent change of alternative choices, with changes in board membership depending on which political party controls the White-House. This means a Republican led board may set precedent on a ULP case based on the Taft-Hartley interpretation of the NLRA, which will be overturned by the next board, led by a Democrat and the original interpretation of the NLRA.

The political question addressed in this paper is whether interpretations of the NLRA by a board member on a ULP charge brought before her/him vary with political party affiliation of the board member, or the party affiliation of the administration that nominates her/him for the job. This issue led unions and employers to accuse board members of making labor laws instead of governing them, and taking sides on ULP cases. Previous studies found statistical support with respect to board members' voting behavior and their party affiliations whereby Republicans appointed by Republican administrations favor employers, and Democrats appointed by Democratic administrations favor unions in their decisions on ULP cases (Delorme et al., 1981; Cooke and Gautschi, 1982). A brief description of the process of the appointment of an individual to the NLRB and the charges of ULP cases from initiation to the board is provided below, which is followed by a brief review of three empirical papers that attempt to predict the voting behavior of the NLRB members.

The process of appointment of the nominees to the NLRB

The appointment process consists of two parts that involve the selection of a nominee by the President, and the confirmation of a nominee by the Senate. Each new board member serves a 5-year term with the option of reappointment, and board members are appointed in an alternating manner in which at least one new board member will be chosen each year. According to Flynn (2000), there have been two distinct eras in the process of appointment, 1950-1980 and 1980 to the present. The difference between the two periods is the changing norms governing NLRB appointments. She characterizes the first era as a period in which the president chose a nominee from a short list of respected professionals in labor-management relations, whose names were provided either by the Chamber of Commerce (management), or unions, and submitted their names to the Senate for confirmation. Both management and unions exercised restraint in constructing their lists of nominees and understood that this was a repeating game, avoiding short term gains, and future retaliations (Flynn, 2000). The second era, however, marks a period in which more ideological candidates emerged from interested parties and more moderate candidates who were routinely selected and approved under the "old rule" encountered serious opposition in the Senate. This meant that involved institutions abandoned their cooperative spirit and became more polarized. According to Flynn, this was a general trend which may have had its roots in the Labor Reform Act of 1977, which passed the heavily Democratic House and died in the Senate following a filibuster led by Utah Senator Orrin Hatch. Labor then insisted upon an appointment of General Counsel's positions that violated the longstanding norm and caused Republican retaliation to Jimmy Carter's nominees thereafter. Flynn concludes that the old norm gave way to a new norm

in which the Senate took over some of what was previously the president's selection of nominees. By exercising power over the process of nominee selection, the Senate made a norm by offering the President a package of nominees, or the president's nominees would not be confirmed. Flynn states that the president relies on both sides of the political spectrum to fulfill his obligations to the public at the national level, but the senators, individually, represent a smaller constituency. This means a senator represents a state (red or blue) and is more likely to vote for a nominee that reflects her/his state's dominant view. However, a president represents all states (red and blue), hence she/he is more likely to nominate a moderate person that pleases both views (Flynn, 2000).

The process of ULP charges

The 73rd Annual Report (2008) of the NLRB states that ULP cases constitute a large part of the NLRB workload. ULP cases are filed with regional field offices against firms or unions by employers, employees, or labor organizations nationwide. An investigation is launched by the regional NLRB staff after the charges are filed. The professional staff of the NLRB determines whether the case violates the NLRA. If there is not a reasonable cause to believe that the NLRA has been violated, the case is dismissed. If the charges have merit, the regional director encourages the involved parties to pursue voluntary settlement. Those cases that are not settled will go before an Administrative Law Judge (ALJ) for a hearing. After the ALJ hearing, the involved parties have to make their decision, whether to accept the judge's ruling or appeal it to the NLRB. However, the NLRB is not the last stop for disputed cases, and some ULP cases continue their journey to higher authorities after the NLRB's ruling. If either party

to the case is not satisfied with the NLRB decisions, the next step is to appeal the case to the circuit courts, or all the way to the United States Supreme Court.

A brief review of three papers on NLRB voting behavior

Delorme et al. (1981) is the first statistical analysis of the voting behavior of the board members on the novel cases that are reported in the NLRB annual report. Among many cases that come before the board members each year, some are more complicated than others and will set precedent for future cases. These "novel" cases are reported under the section "Unfair Labor Practice" in the NLRB annual report. Delorme et al. employed a binary choice model on votes by the NLRB members on the cases for the period of 1955-1975. Their paper hypothesized that board member's voting behavior on ULP cases was impacted by political considerations and economic conditions. Their political variables included political party affiliation of the board member, and the administration that made the appointment and the reappointment decision. The unemployment rate, aggregate income, strike days lost, and union membership at the national level are among the economic variables they utilize. They hypothesized that Democratic members of the board are more likely to vote prolabor and Republican members are more likely to vote promanagement. Democratic administrations prefer a majority of prolabor board members and Republican administrations favor a minority of prolabor board members. A reappointment of a board member is hypothesized to be positively related with prolabor votes because presidents, Republican or Democrat, historically reappointed members based on their voting records; in the past, they reappointed members that voted more prolabor, because union members constituted a large block of voters in the presidential elections and a sitting President did not want to

look antagonistic to unionized labor. According to the authors, union members are informed by their leaders about board nominees and the president's appointments. The effect of the unemployment rate on voting behavior was uncertain, because it depended on the tradeoff between unemployment and inflation and the goals of the administration. Aggregate income was expected to lead to more promanagement votes, because board members were reluctant to seek support for the administration in a period of prosperity. Nation-wide union membership rates were assumed to be directly related to prolabor votes, since a higher union membership lends more political support for the administration.

The authors estimated a linear probability model in which the dependent variable is the natural logarithm of the odds of the NLRB member voting prolabor in a specific year [log (p_{it}/(1- p_{it})]. Their model estimated three separate periods: the Eisenhower administration (1955-1961), the Kennedy-Johnson administration (1962-1970), and the Nixon administration (1971-1975). Furthermore, they estimated a pooled regression for all periods from 1955 until 1975. For the entire period, they found the members' political party affiliations, the party of the administration appointing the board members, and reappointment were related to the voting decisions on the ULP cases. A Democratic administration increased the odds of voting prolabor. The odds of a prolabor vote were greater when the board member was a Democrat. A reappointed board member was more likely to vote prolabor. During periods of high national unemployment, the odds of a prolabor vote were greater than during periods of low unemployment. Other economic variables had mixed results having impact on the odds of a prolabor vote in one period and not in another period.

The article by Cooke and Gautschi (1982) is similar to the paper by Delorme et al. (1981) in terms of the period under study, and used a similar dependent variable, as well as cases that were novel, or set precedent for the future. Cooke and Gautschi also found that members were influenced by their own political party affiliations and the party of appointing administrations. However, they used a set of "public opinion" variables whereas Delorme et al. (1981) used economic variables in addition to the ideological variables. This difference sets these two papers apart. Public opinion variables included the percentage of Democrats in the Senate, public approval of labor unions using Gallup polls, and the annual percent of representation elections won by unions. However, in estimations, none of these public opinion variables were found to have a significant impact on voting behavior.

The latest paper by Cooke et al. (1995) revisited the issue of NLRB voting on ULP cases and developed an alternative model to estimate a board member's decision making behavior on ULP cases. Their model not only included determinants of board members' voting behavior studied by other researchers, but also new factors such as case characteristics and the group context. "Group context" here refers to the composition of the panel making decisions on each case. For instance, which political party has the majority on the panel at the time of decision making? In contrast with the previous two studies, they did not use the novel cases that are reported by the NLRB annual report. Instead, they used a random selection of six ULP cases brought before the board each year between 1957 and 1986. They divided the cases into two distinct groups. Group one presented the cases that were complex and important; group two contained cases that were less important and simpler. Three criteria were chosen to distinguish between

complex and important cases, and those that were less important and simpler. Cases in which more than three members participated in decision making, which had a longer deliberation time, and which were reported in the NLRB annual report as novel were designated as important. The rest represented simpler cases. They implemented prohibit estimation of the two subsamples. The dependent variable was a binary variable, which was set equal to 1 if the vote was for the employer, and zero otherwise. In their later study, they used ideological, economic, and public opinion variables as their independent variables. They utilized ideological variables such as interaction of a member's party and the party of the appointing president, member party, and the party of the majority on the panel, and a series of interaction variables that reflected the weight of the ALJ ruling, and the finding of field officers on a board member's decisions. Economic and public opinion variables include the unemployment rate and Congress COPE (average percentage of Congress voting similar to the AFL-CIO's position on AFL-CIO selected bills). Their results indicated that the member's party and the party of the appointing president are significantly related to votes in those cases that are complex and important (20%) and are less related in those cases that are routine. In less important cases, they found a consistency between the decisions made by the regional office, the ALJ, and the board. The minority-majority status of the members on the panels also influenced the member's voting decisions. A Republican board member was more than twice as likely to vote for management when s/he was in the minority, relative to when s/he was in the majority on panels. Finally, they found some strong evidence with respect to economic conditions and public opinion variables. Consistent with Delorme et al., they found board members were more sympathetic towards the union than management when unemployment was high

and, in contrast to Cooke and Gautschi, they found strong evidence between members' voting decisions and public accountability. In complex cases, they found both COPE and RTW states were negatively related to promanagement member's votes. This meant the board members were more likely to vote against employers, if the case was originated from a RTW state in the South or a majority of Congressional members voted with AFL-CIO in the decision year.

NLRB Voting Behavior 1993-2008

This paper uses individual board member voting decisions on "novel" cases reported in the NLRB Annual Report.[9] We focus on these cases for two reasons. First, these cases set precedents for future cases and their complexity requires board member's interpretation of the NLRA. Second, they provide an opportunity for the board members to reveal, if any, their prolabor or promanagement preferences. Furthermore, Cooke (1995) stated that simple and routine ULP cases are not influenced by the board member's preferences. There were 295 novel cases that were reported by the NLRB annual report during the period of 1993-2008 (Table 15). In order to capture the full extent of the board member's preference towards management or unions, we excluded the following cases in this study. First, we excluded those cases that did not involve both unions and employers. These cases included charges that were filed by employees against unions or employers and vice versa. Furthermore, we excluded two ULP cases that involved unions against unions. Second, there were 13 cases in which the outcomes were not immediately clear to us. Unclear cases are those that contained multiple charges and the outcomes were partially pro-union and partially promanagement, making them hard

[9] In the 2008 NLRB Annual Report, novel cases are reported on pages 31-41 (www.nlrb.gov/annual-reports).

to categorize as pro-union or promanagement votes. In addition, sometimes panel members expressed various opinions concurring in part and dissenting in part, depending on different parts of the charges. Two of these cases were already excluded due to employees being plaintiffs. Finally, in 2008, there was a period in which the NLRB consisted of only two board members during which time nine cases were decided. We also excluded seven of those cases from our regressions that involved unions and employers; two others were automatically excluded involving employees again. Out of the 295 cases, we included the remaining 223 cases for our analysis. Each ULP case was reviewed by a panel consisting of three to five board members. In this sample, there were 750 observations (votes); 488 votes were prolabor and 262 votes were promanagement (65 and 35 percent, respectively).

Table 15, column 2 lists the number of cases that we included in our analysis. Out of 295 ULP cases reviewed and decided by the board during this period, 220 were filed by the unions against employers. Fifty-two were filed by employees, and 21 cases were filed by employers against unions. Column four shows cases that were excluded from our model. The ULP cases that we analyzed in our model comprise 75.6 percent of all "novel" cases reported in the NLRB annual report.

Table 16 lists the board member's voting records, political party affiliation, and background. Gov. /Acad. means that the board member either worked for the government or had an academic job prior to her/his appointment to the board.

The second column shows the percentage of average pro-union votes cast by the members for the period of 1993-2008. Note that two out of 21 members never voted pro-union, while one member voted 100 percent pro-union, and three members voted over 90

percent pro-union. High percentages of pro-union votes came from Democrats with a union background and a low percentage of pro-union votes came from Republicans with a management background. There are four board members who are Republican that worked for management and voted on average between 55 to 65 percent pro-union. Three out of four served under the Clinton Administration, and one was appointed by President Clinton. Column three delineates the total votes that each member cast during this period. Again, there are large variations in the number of votes cast. Liebman had the greatest number of votes (114), followed by Battista (85), and Walsh (81). Column four lists the background of each board member before joining the NLRB. Columns two and four show that there was a relationship between the percentage of pro-union votes cast and a member's background. Members with a union background voted overwhelmingly in favor of unions, and members with a management background voted in favor of employers. Those members with a government or academic background voted overall in favor of unions rather than employers except for member Schaumber.

To visualize the voting behavior of each board member with respect to her/his background, we constructed a two-way plot for each member over the period of 1993-2008. Figure 16 shows the percentage of the pro-union votes cast by each member on the vertical axis and the years in which the votes were cast on the horizontal axis. It also lists each member's background in front of her/his name. GA stands for government or academia, M for management, and U for union. Figure 16 includes the name, political party affiliations, and the background of each board member in our study period. Furthermore, it shows how many years (each knot represent a year) each member served on the board and his/her voting patterns during his/her tenure. Members Browning, Fox,

Liebman, and Walsh, who are Democrats from union backgrounds, and served 4 or more years on the board, have the highest percentage (more than 90 percent) of pro-union votes among all members. Their combined votes account for 35 percent of all votes. Members Battista, Cohen, Hurtgen, and Schaumber have the lowest percentage (less than 50 percent) of pro-union votes among all board members. They are Republicans from management backgrounds[10] and served 3 or more years on the board.

Their votes account for 31 percent of all votes. The years matter here, because the longer a member served on the board the higher her/his share of the vote. This, in turn, reveals the overall pattern of a board member's voting behavior considering her/his background, political party affiliation, and voting record. Figure 16 also shows some extreme voting behavior. For example, Browning, a Democrat with a union background, voted 100 percent pro-union and Bartlett and Cowen, two Republicans from management backgrounds, voted zero percent pro-union.

Twenty-one board members served on the NLRB during the 1993-2008 period. Ten board members came from a management background, seven members from government or academia, and four members from a union background. Two hundred and forty-two votes were cast by board members from management backgrounds, 245 votes by board members from government or academic backgrounds, and 263 votes by members with union backgrounds. Figure 17 demonstrates the total votes and pro-union votes of the board members. Pro-union votes as a percentage of total votes by the board members vary from a low of 38 percentage points to a high of 94 percentage points, with board members from government and academia in between with 62 percentage points.

[10] Member Schaumber's background is not clear, therefore we assume him as government and academia background in our analysis.

Board members from management backgrounds had the highest number of members on the board during this period, the lowest number of votes, and the highest percentage of promanagement votes in this period. Government and academia had the second highest number of members, second highest percentage votes pro-union, and the second highest number of votes. Members with union backgrounds had the lowest number of board members, the highest number of votes, and the highest percentage of pro-union votes. These statistics delineate that board member's background played a crucial role in their voting behavior; however, it does not tell us about other factors that influence the voting behavior of the board member. Previous studies pointed out that economic conditions, the political party of the appointing president, and the administrative law judge ruling, were all related to the voting behavior of the board member. However, background as a determinant of voting behavior was not included in their empirical studies.[11] The following section will introduce the empirical model that is used to incorporate all relevant determinants of voting behavior of the board.

Empirical Model

The empirical model we use is a logistic regression:

$$(1) \qquad Logit(\ Y_{itc}\ ) = Ln[P_{itc}/(1-P_{itc}\ )\ ] + \alpha + X_{itc}\beta_{itc} + C_c + e_{itc}$$

Y is a dichotomous variable and equals 1 if a board member votes in favor of unions and equals zero if the member votes promanagement. P is the probability of Y being equal to one and (1-P) is the probability of Y being equal to zero. Ln [P_{it} /(1- P_{it})] is the natural log of odds of Y, α is the intercept, β is a vector of logit coefficient corresponding to

[11] Cooke and Gautschi (1982) used a management background variable in their model.

explanatory variables, X is a vector of explanatory variables, C captures case's fixed effect, and ϵ is the residual. The subscript i stands for the ith board member, t is the year of the decision, and c stands for the ULP cases. Vector X includes board member's background, the party of the board member, the party of the appointing administration, the majority of the political party on the panel, the recess appointee, the unemployment rate, the average senate votes, RTW states, and case originated state.

The analysis uses pro-union votes that were cast by the NLRB board member with ULP cases as its dependent variable. This variable is derived from those novel cases reported by the NLRB annual report and can be accessed at www.nlrb,gov/annual-reports.

The independent variables, which are listed in Table 17, are defined as follows:

Member's background

Out of 21 board members during this study period, there were 10 board members from management backgrounds,[12] seven board members from government or academia, and four board members from union backgrounds.

Board member's background has been a source of controversy for many decades. When Congress formed the NLRB in 1935, it visualized a board consisting of impartial members of the government (Flynn, 2000). The early board members were drawn from government members or other neutral backgrounds such as academia. However, as we mentioned in the literature review, the trend in neutral backgrounds of the Board

[12] Kirsanow (Management lawyer, http://www.usccr.gov/cos/bio/kirsanow.htm, accessed 4/29/2011, accessed 4/29/2011). Meisburg (Management lawyer, http://www.nlrb.gov/search/nlrbsearch/Meisburg, accessed 4/29/2011). Battista (Management, http://www.nlrb.gov/search/nlrbsearch/battista, accessed 4/29/2011). Dennis (Government, http://www.nlrb.gov/search/nlrbsearch/dennis%20walsh). Bartlett and Cowen (Management,www.nlrb.gov/search/nlrbdocsearch/michael%20j.%20bartlett

appointees was broken by President Eisenhower in the 1950s. According to Flynn, this change, although it was originally controversial, later became the norm. Board members' backgrounds up until the 1980s might not have played a big role since both sides of the political spectrum showed restraint in their choices of board nominees. Board members' backgrounds became more relevant as more moderate nominees from both political parties were denied appointment to the board after the 1980s.

Flynn (2000) provides some insight into the polarization of the board members' voting on ULP cases for two different periods. Period one covers 1955-1979 and period two covers 1985-2000. The comparison of these two periods shows that the board members' votes became more skewed towards either union or management in the second period depending on the board members' backgrounds. Tables 18 and 19, which are derived from Flynn (2000), show that the number of board members from a government and academic background has dropped from 13 in the period of 1955-1979 to only six in 1980-2000 and the number of board members from a management background has increased from five to nine for the same period. Not only the composition of the board members' backgrounds has changed from pre-1980 to after the 1980s, but also the board members' voting behavior has experienced change from one period into another.

Flynn (2000) divided the board members into two groups, pro-union and pro-management. The pro-union group included members who voted on average more than 50 percent in favor of unions. The promanagement group included board members whose votes averaged more than 50 percent promanagement. We further divided each group into three subgroups with respect to their backgrounds. Board members with a government or academic background on average voted 63 percent pro-union (eight out of 13, seven

Democrats and one Republican) and 60 percent promanagement (five out of 13, four Republicans and one Democrat) in the first period. In the second period, on average 70 percent of government or academia votes were pro-union (three Democrats and two Republicans) and 59 percent promanagement (one Republican). Board members with a management background voted 54 percent pro-union (one Democrat) and 64.5 percent promanagement (three Republicans and one independent) in the pre-1980s. After 1980, members with a management background on average voted 75 percent pro-union (two Democrats and one Republican) and 85.5 percent promanagement (six Republicans). Members with a union background were not represented in the first period[13] and the second period included three members with a union background who on average voted 94 percent pro-union (three Democrats).

These statistics show that board members' voting behavior in ULP cases changed in the second period and became more skewed towards unions or management. The composition of board members' background also changed and became more a mixture of management or unions from government and academia. We believe that a board member's political party affiliation alone cannot capture the variations in ideology that existed among board members from the same political party. Members, within a political party, may differ in their views by being moderate or to the left or the right. Therefore, political party affiliation of the board member cannot capture the degree to which a board member's vote is impacted by her/his background. The distribution of votes among three backgrounds does not vary much and are as follows. Thirty-three percent of the votes were cast by government and academia, 32 percent by management, and 35 percent by

[13] In the period of 1955-1979, Flynn (2000) indicated one member who was from both management and union background. We did not include that member.

the members from union backgrounds (Table 20). We expected the board members with union backgrounds to disproportionately cast pro-union votes, members with management backgrounds to disproportionately cast promanagement votes, and we used government/academia as our base.

Member party

A board member's political party affiliation was found to influence the member's voting behavior on ULP cases in the past. Empirical studies in the past found that the board members from the Democratic Party were more likely to vote pro-union than the members of the Republican Party. Since all board members, listed in Table 16, are affiliated with one of the two major political parties, we used a dichotomous variable equaling one for Democrat and zero for Republican. The NLRB reports all board members' political party affiliations, which can be accessed at (www.nlrb.gov/about_us/overview/board/board_members_since_1935.aspx).

Party of administration

A board member appointed by the President is subject to the Senate's confirmation. Members that are appointed by a Democratic President are more likely to vote pro-union (Delorme, 1981). This study uses a dichotomous variable for the party of the administration. It equals one if the board member is appointed by a Democratic President and zero if s/he is appointed by a Republican President. We expect a positive sign for this variable's coefficient.

Administrative Law Judge

According to Cooke and Gautschi (1982), a ULP complaint carries more weight in a board member's decision if the complaint is sustained by an ALJ, rather than a case that was rejected by the ALJ. Our data show that 67 percent of the ALJ's ruling were in favor of unions and this is slightly higher than the 65 percent pro-union votes for all the members of the board. In order to control for the influence of the ALJ's decision on a board member's vote, we created a dichotomous variable, which we call "pro-unionAlj." Pro-unionAlj equals one if the ALJ's ruling is pro-union and zero otherwise. We expect a positive relationship between this variable and a pro-union vote.

Trend

A trend variable is used here to control for the year of the decision, 1993-2008.

Recess

A report by the NLRB, which can be accessed at (http://www.nlrb.gov/members-nlrb-1935), shows that recess appointments to the board started in 1982 under President Reagan. Then, the second and the third recess appointments occurred in 1988, which marked the beginning of more routine recess appointments thereafter. The first recess appointment began with the nomination of Van de Water. According to Flynn, Van de Water was a staunch anti-union management consultant, who was a proud victor in 125 of 130 anti-union campaigns. His nomination was blocked in the Senate Labor Committee by a tie vote. Recess appointments are a way in which the President shows her/his disagreement with some members of the Senate on their choice of nominee to the NLRB. It is not clear whether their disagreements center on the nominees or some other

unresolved issue that leads to such disagreement. According to Flynn, the Senate labor committee not only refuses to confirm moderate NLRB nominees, but recently became more intrusive in the process of selecting nominees. During the study period, there were 11 board members appointed during the Senate recess. Two recess appointees were from government and academia, six from management, and three from union backgrounds. Six out of the 11 recess appointments were at some time confirmed by the Senate, before or after their recess appointments. Five members were confirmed during our study period. We created a dummy variable, which equals one if the board member is a recess appointee in the year of decision making and has never been confirmed by the Senate during the study period. We expect this variable to be negatively related to a prolabor vote, because all board members, who were recess appointees and have not been confirmed by the Senate during our study period, are Republicans.

Unemployment rate

Previous studies used the unemployment rate to determine whether a member's voting behavior was affected by economic conditions. The results for the unemployment rate depended on the member's perception of economic conditions (Delorme et al., 1981). High unemployment may cause sympathy towards labor, hence a pro-union vote, and a low unemployment rate with a rise in general prices would negatively affect member's decisions. We speculate a positive relationship between unemployment rates and pro-labor votes due to a board member's sympathy towards labor.

Panel majority

Cooke et al. (1995) stated that a panel majority with respect to political party affiliations may insert influence on an individual board member or on the minority party of the panel. For instance, the minority on the panel may seek majority approval or the evidence in the case may not warrant a dissenting view from the minority. However, a competing hypothesis indicates that the minority may want to emphasize their own views and may believe an added persistence is needed if they are to challenge the majority view. Cooke et al. (1995) concluded that their results partially supported the notion that the minority persist on their pro-union or promanagement views. Republican members were more likely to vote promanagement when they were in the minority. We do not speculate any prior outcome for this variable.

Equation 1 is estimated using logit analysis for 1993-2008. We estimate two models that differ in terms of explanatory variables. Model one includes all our independent variables that were listed in Table 17. Model two excludes member's political party affiliation due to some technical issues that are explained in the next section. Model one explores the importance of board member's backgrounds in the presence of member's political party affiliations. Model two is employed to overcome some statistical problems and is our preferred model.

Empirical Results

Table 21 reports the results of two logit models for voting on ULP cases by NLRB members between 1993 and 2008. In model one, we included board member's background, their political party affiliations, the party of appointing administration, ALJ's ruling, trend, recess appointment, unemployment rate, and panel majority.

As we expected, board member's background along with their political party affiliations are related to voting on ULP cases and their coefficients are statistically significant with the anticipated signs. The odds of a board member voting pro-union is positively related to a union background and negatively related to a management background relative to the base. The coefficient for the union background is statistically significant at the .01 level. This result implies that a board member with a union background compared to a board member from a government or academic background is significantly more likely to vote pro-union, even after controlling for his/her political party affiliation. The issue of a member's background was raised by Flynn (2000) due to a change in the process of board member nominations after 1980. Furthermore, Tables 18 and 19 show a significant reduction in the number of board members from government and academic backgrounds, and an increase in management and union backgrounds after the 1980s in comparison to the earlier period. The board not only had more members with management and union background than before the 1980s, but also members' voting behaviors gravitated to one side or the other. Although the coefficient for management background is not statistically significant, it has the right sign. This might be due to a high variance inflation factor (VIF) for this variable in this model (greater than 5) and a high VIF for member's political party (Tables 22 and 23), which led us to run a second model that we will discuss next. Member's political party affiliation is an important determinant of the board's voting behavior and its coefficient is statistically significant at the .01 level. Democrats are more likely to vote pro-union than Republicans and this result is consistent with the reports by earlier empirical studies. The ALJ's ruling is also related to pro-union vote in this model and its coefficient is highly significant at the .05

level. This result means that the log of the odds of the ALJ ruling is positively related to pro-union votes and reflects the 67 percent pro-union votes by the ALJ in that period. Previous studies used interaction variables with respect to the influence of the ALJ's ruling and they were not comparable to our proxy. Other variables such as appointing party, the unemployment rate, recess appointment, and the majority on the panel did not significantly impact pro-union votes and their coefficients are not statistically significant. The result for the unemployment rate in our model differs with those by Delorme et al. (1981) and Cooke et al. (1995). Those studies found unemployment rates to be positively related to pro-union votes and its coefficient was statistically significant. Delorme et al. (1981) did not include the majority on the panel and Cooke et al. (1995) used this variable in interaction with political party affiliations, which resulted in a partial effect on a board member's voting behavior, in that the panel majority was more relevant to the Republican board members and it had no effects on Democratic board members. Recess appointment was not included in any of the earlier studies and it was created for this study to capture the effects of those members who were appointees by two presidents and have not been confirmed by the Senate. This variable did not impact pro-union votes and might be influenced by two issues. First, there were only four members of the board that did not receive confirmations and their total votes were very small in comparison to total votes. Second, their confirmation may have been influenced by disagreements between the president and the Senate and not their credentials.

Model two differs from Model one, in that it does not include a member's political party affiliation. There are two reasons for excluding a member's political party affiliations from model two. First, a member's political party in model one carries a VIF

greater than seven, which is larger than five (VIF = 5 our upper limit). Second, its effect is captured by a member's background and party affiliations and appointing president in our model. By excluding a member's political party in model two, both the coefficients for management background and the party of the appointing president become statistically significant and are larger in their magnitudes.

Results for model two shows that union background, management background, political party of the appointing president, and ALJ's ruling are all related to pro-union votes and their coefficients are statistically significant at the .10 and .01 levels. Political party of the appointing president and management background did not significantly affect pro-union votes in model one; however, they were highly related to pro-union votes in model two and their coefficients were statistically significant at the .10 and .01, respectively. These differences may have been due to the problem of multicolinearity that we observed in model one.

What does all this mean? These results show that a board member's background has a significant impact on a board member's voting behavior on ULP cases and implies that board members' backgrounds must be considered in empirical models as a determinant of board member voting behavior on ULP cases. Furthermore, our results for other variables, the party of appointing administration, and the ALJ's ruling, are consistent with previous studies and have a large impact on pro-union votes. We also included other variables, as was suggested by Cooke et al. (1995). For example, we included an AFL-CIO COPE variable (a measure for public accountability of the board members), a dummy variable for the cases that originated in a RTW state (a measure for

employer image), and GDP (a measure of economic activities); however, these variables did not produce any significant effects on pro-union votes in our models.

A policy implication of this study is that the NLRA needs changes to overcome criticism by unions and employers. These changes should address all three issues that were raised at the beginning of this paper: more comprehensive language of the labor laws, a uniform intention by law makers with respect to collective bargaining or individual rights, and appointment and confirmation of board members that are respected by both sides, and are more likely to vote on the merit of a case and not be influenced by their background and the political party of the appointing president. Our results showed that board members from government and academia on average voted 62 percent pro-union, which lies between 38 and 94 percent for management and union, respectively. One conclusion from these results is that board members from union background are more likely to vote pro-union than their counterparts relative to government employees and academicians. However, it is difficult to draw additional analysis without detailed information on individual cases. Another observation from these results is that ALJ and board members' pro-union votes from government and academic background were similar for this period. ALJs and board members from government and academic backgrounds on average voted 67 and 62 percent pro-union in this period. This result might be just a coincidence, or it implies a relationship between voting behavior of ALJs and those board members that requires further research.

Unions believe that an amendment to the NLRA is needed to overcome some of these criticisms. They have tried to amend the NLRA through the US Congress; however, their efforts were resisted by management.

Conclusion

This paper has utilized two logit regression models in order to assess factors influencing NLRB board members' voting behaviors on ULP cases. Results obtained here from two regressions confirm previous studies that board members' political party affiliations, the party of the appointing administration, and ALJ rulings influence voting behaviors of the board members. Additional variables, recess and member's background, were employed to capture changes in the process of the board member nomination, which has emerged since the 1980s. The recess variable did not meet our expectations and had no significant impact on the pro-union votes. Results for this variable might have been influenced by the low vote counts for these recess members during our study period compared to the total votes. Board member's background, on the other hand, turned out to be a very important determinant of pro-union votes. This variable not only accounts for board members' political party, but also measures the level to which a board member is affected by his/her background. Board members from the same political party, but from different backgrounds, voted differently on ULP cases. The background issue may not have been relevant to the previous empirical studies, because their data came from earlier periods. Board members background became relevant after the 1980s, when the Senate became more pro-active and took over some of the president's roles in the selection phase. As was reported by Flynn (2000), a member's union or management background became increasingly important determinants of votes in favor of union or management. Our results also show that board member's background played crucial roles in voting on ULP cases and had an effect on the member's voting behavior.

Table 15: Unfair Labor Practice Cases 1993-2008

Type of Cases	**No. of Cases**	**% of Total Cases**	**Comments**
Total Cases reviewed	295	100.0	
Union against employer	220	74.6	
Employer against union	21	7.1	
Employee against union and employer	52	17.6	Excluded
Union vs. union	2	.7	Excluded
Total Potential Cases	241	81.7	Remaining cases
Total Unclear Cases	13		
Union against employer	11		Excluded
Employee against union and employer	2		
Cases with only two members deciding	7		Excluded
Total cases used in the model	**223**	**75.6**	**Remaining cases**

Data Source: Derived from NLRB annual reports

Table 16: Board Members' Voting Record, Party Affiliations, and Background (1993-2008)

Member	**Average % pro-union**	**Number of votes cast**	**Member Party**	**Background**
Acosta	*50*	12	Republican	Gov. or Acad.
Bartlett	0	3	Republican	Management
Battista	28	85	Republican	Management
Brame	60	10	Republican	Management
Browning	100	30	Democrat	Union
Cohen	48	27	Republican	Management
Cowen	*0*	4	Republican	Management
Devaney	89	28	Democrat	Gov. or Acad.
Fox	92	38	Democrat	Union
Gould	79	52	Democrat	Gov. or Acad.
Higgins	64	11	Republican	Gov. Acad.
Hurtgen	25	44	Republican	Management
Kirsanow	36	14	Republican	Management
Liebman	93	114	Democrat	Union
Meisburg	55	11	Republican	Management
Oviatt	60	15	Republican	Management
Raudabough	65	17	Republican	Management
Schaumber	33	78	Republican	Gov. or Acad.
Stephens	59	34	Republican	Gov. or Acad.
Truesdale	79	42	Democrat	Gov. or Acad.
Walsh	91	81	Democrat	Union
Total		**750**		

Data Source: Compiled from NLRB annual reports

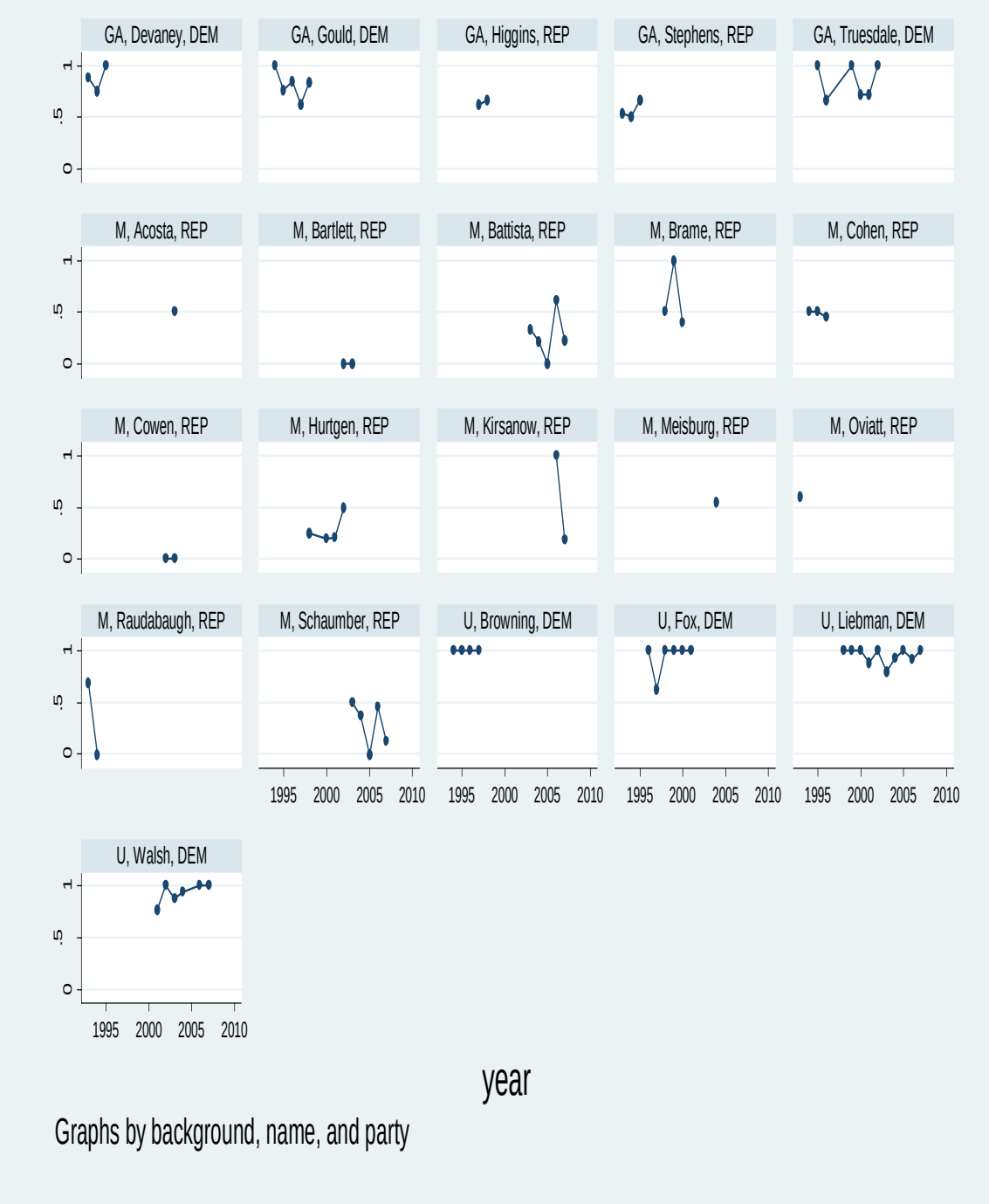


Figure 16: Pro-Union Votes by each Board Member 1993-2008

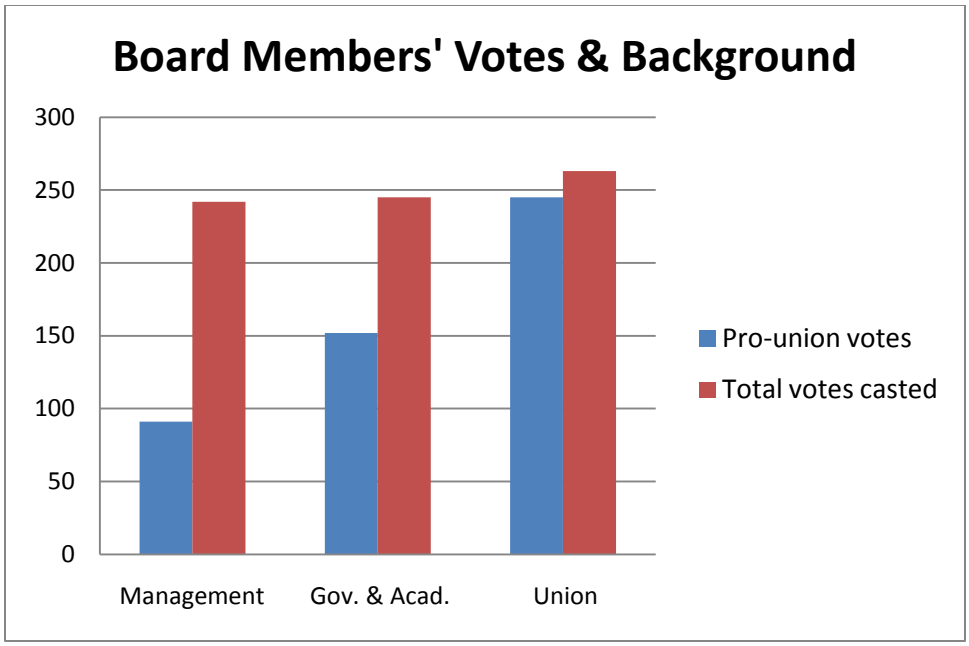


Figure 17: Votes by Background 1993-2008

Table 17: Variables and their Definitions.

Variable	Definition
Uback	Equals to one if the board member is from a union background and zero otherwise.
Mback	Equals to one if the board member is from a union background and zero otherwise.
GAback	Is our base and equals to one if the board member is from a government or academic background and zero otherwise.
Memberparty	Equals to one if the board member is a Democrat and zero otherwise.
Apparty	Equals to one if the appointing President is a Democrat and zero otherwise.
Aljprou	Equals to one if the ALJ's ruling is pro-union and zero otherwise.
Trend	Equals to one if the period is from 1993 to2000 and zero otherwise.
Mrecess	Equals to one if the Board member is a recess appointee and has not been confirmed by the Senate before or after her/his recess appointment and zero otherwise.
Unemployment rate	National unemployment rate in the year of voting.
Panel Majority	Equals to one if the panel majority is Democrats and zero otherwise

Data Source: National Labor Relations Board website (www.nlrb.gov)

Table 18: NLRB Voting Records 1955-1979

Background	Number of board members	Percent pro-union votes	Percent pro-management votes
Govt. & Acad.	13	62 (7D+R)	60 (4R+D)
Mgt	5	54 (D)	64.5 (3R+ind)
Union	0	0	0

Data Source: Flynn (2000), table 1

Table 19: NLRB Voting Records 1980-2000

Background	Number of board members	Percent pro-union votes	Percent pro-management votes
Govt. & Acad.	6	70 (3D+2R)	59 (R)
Mgt	9	75 (2D+R)	85.5 (6R)
Union	3	94 (3D)	0

Data Source: Flynn (2000), table 2

Table 20: Background and Votes Cast on ULP Cases 1993-2008

Background	**Total votes cast**	**Percent of Total**	**Recess votes**
Government and Academia	245	33	38
Management	242	32	53
Union	263	35	55
Total	**750**	**100**	**146**

Data Source: derived from the NLRB annual reports

Table 21: Results for Pro-union Votes on ULP Cases 1993-2008

Variables	**Model 1**	**Model 2**
Uback	6.1782	5.9395
	(1.778)***	(1.692)***
Mback	-0.7614	-4.2883
	(1.243)	
		(0.958)***
Memberparty	6.3030	
	(1.738)***	
Appointingparty	0.491	1.9609
	(1.251)	
		(1.051)*
Pro-UAlj	4.3064	3.3674
	(1.604)***	
		(1.243)***
Trend	-0.5010	-0.2598
	(0.223)**	(0.185)
Mrecess	0.2234	-0.5917
	(1.266)	(1.145)
Unemp rate	-0.611	-0.0324
	(1.246)	(1.077)
Panel-Democrat	-0.5935	-0.5296
	(1.716)	(1.469)
Cons	1002.9500	520.9672
	(451.425)**	
		(375.773)

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 22: Variance Inflation Factor for Model 1

Variable	**VIF**	**Tolerance**	**R-Squared**
Uback	*2.77*	0.3613	0.6387
Mback	6.32	0.1583	0.8417
Memberparty	7.22	0.1385	0.8615
Appointingparty	2.54	0.3938	0.6062
Pro-UAlj	1.04	0.9594	0.0406
Year	3.13	0.3191	0.6809
Mrecess	*1.14*	0.8801	0.1199
Unemp	2.42	0.4131	0.5869
PanelD	1.97	0.5081	0.4919
Total	**3.00**		

Table 23: Variance Inflation Factor for Model 2

Variable	**VIF**	**Tolerance**	**R-Squared**
Uback	*2.62*	0.3810	0.3023
Mback	2.61	0.3831	0.6190
Appointingparty	2.34	0.4277	0.5723
Pro-UAlj	1.04	0.9599	0.0401
Year	2.97	0.3362	0.6638
Mrecess	*1.08*	0.9274	0.0726
Unemp	2.41	0.4146	0.5854
PanelD	1.97	0.5081	0.4919
Total	**2.05**		

Figure 18: Percent Votes Pro-Union by Members 1993-2008

CONCLUSION

This dissertation, which contains three essays, explores the factors that influenced unionization in the US. The period between 1980 and 2008 was chosen, because this period represents the worst period for union membership rates since the Great Depression and was not adequately covered by other studies. Each of the three essays explores a specific section of the US trade unions and made contributions to the existing literature. The following paragraphs report the findings of each essay.

Essay one examined the factors that caused variations in the US private sector union density at the state and state-industry levels in 1985, 1995, and 2005 by utilizing OLS and 2SLS regression analysis. State-industry level analysis is unique to this paper and revealed details on industry and unionization that were different from the analysis at the state level. Furthermore, it used a decomposition method to account for the decline in union density over time. The decomposition method showed that overall endowment effects at the state-industry level were positive over this period and the coefficient effects were negative, which led to a net decline in union density. In addition, it showed that the determinants of unionization had different impacts on union density in different periods. At the state-industry level, our results showed that union density was positively determined by the level of earnings, share of blue-collar workers in the labor force, union activism, and urban areas. Unionization is found to be negatively impacted by female share, management opposition, and RTW laws. Other variables in the model do not

produce consistent signs or their impacts are not statistically significant. Regions, according to our analysis, play a significant role. We found, for instance, the Midwest region is more likely to be unionized than the Southern region of the country. These results might be due to more favorable labor laws in the Midwestern region compared to the South. Our state-industry level analysis also shows that industries exhibit strong results for all four regressions. Some industries such as utility, transportation, and communications have greater impact on unionization than others such as durable and retail. Furthermore, two out of three new measures of union and management behavior, which we introduce in this paper, significantly impacted union density across states and over time. Management opposition negatively affected union density during the entire period and its coefficient was statistically significant at .05 level. An increase in management opposition led to a decline in union density. Union activism, another variable introduced in this paper, positively impacted unionization during the study period and its coefficient was statistically significant at .01 level. Unions can help to raise the levels of their membership by actively organizing new members. The results for these two variables met our expectations and are consistent with the literature. The Oaxaca-Blinder decomposition method showed that the overall contribution of the endowment portion of the decomposition for the state-industry was 6.64 percent. However, the effects of the coefficients (unexplained portion) have been larger and negative, which led to a net decline in union density for these periods. Average earning is a positive contributor in the endowment effects and blue-collar workers, union activism, and employer oppositions are negative contributors. In the coefficient effects, female share and union activism are positive contributors. The biggest single negative contributor to the unexplained portion

is the intercept or the shift, which is minus 28.31 percent. Overall, our model confirms the finding of the previous studies for determinants of unionization and more importantly, it verifies our choice of proxies for employer opposition and union activism.

Essay two took a different approach to examine the recent history of public sector unionization in two intermountain states. A comparison of Colorado and Utah was chosen because these states have many similarities in their determinants of unionization known to the empirical studies. These determinants include region, state labor laws, and private sector unionization. However, they experienced a very different history of change in their public sector union density between 1983 and 2008. Data showed that most of the changes in the public sector union density occurred in Utah, while Colorado to some extent mimicked the national averages. The analysis of this paper showed that the factors that have led to the decline in the public sector union membership in Utah, which was higher at the beginning of the study period and lower at the end, were to a lesser extent due to economic factors, composition of the labor force, and union activities. More importantly, the decline in the public sector union density in Utah compared with Colorado was due to changes in public attitudes in Utah, which led to a super majority control of government by the Republican Party in that state. All three branches of the government in Utah were controlled by the Republican Party during the study period, whereas Colorado's Republican Party did not have the same advantage during this period. Republicans in office have consistently favored business over labor as was indicated by their voting records on issues that matter to labor and were recorded by AFL-CIO COPE. Republican super majority in Utah led to greater management resistance towards unions than in Colorado. The Paycheck Deduction Act was an

example of the comparison between these states. Utah's public unions declined at a faster rate than Colorado due to stiffer opposition from public management in that state.

The third essay assessed factors that assumed to influence NLRB voting behavior on ULP cases, which are related to private sector unionization and have an effect on union membership. This empirical study utilized two logit regressions and expanded on previous empirical studies. The results obtained not only confirmed previous studies conclusions, but also confirmed our newly introduced variables for the board member's background. It showed that the party of the appointing administration and ALJ rulings influence voting behaviors of the board members, and these results are consistent with previous findings. Furthermore, the member's background proved to be an important determinant of the pro-union votes in this period, which differed from the earlier period. Board members with a management background were negatively related to the pro-union votes, and members with a union background were positively related to pro-union votes. On average 38 percent of the votes cast by board members with management backgrounds were pro-union, and 94 percent of the votes were by board members with union backgrounds. Board members with government and academic backgrounds voted on average 62 percent pro-union, which was slightly lower than the percentage vote by ALJs at 67 percent. These statistics and the regression analysis showed that board members' backgrounds profoundly affected board members' voting behavior on ULP cases. Previous studies showed that board members' political party affects their voting behavior on ULP cases; however, they could not capture the degree to which a board member is affected by political ideology. Board members from the same political party, but from different backgrounds, voted differently on ULP cases. In addition, our results

show that the board members background played a crucial role in voting on the ULP cases even after controlling for board members' political party affiliations in our first model, and other variables that have an effect on members voting behavior.

The three essays in this dissertation are related in many aspects. They are all related to unions and unionization. They share common themes such as the period of coverage, employer opposition, and labor laws. Most importantly, they lead to similar conclusions. Union membership can be greatly improved by comprehensive labor laws that reflect the need of the market and are fair to all market participants. For instance, the results for essay one showed that RTW laws are negatively related to union density and states with such laws have lower unionization. Lack of collective bargaining laws opens the door for conflict between management and public employees representative in a state, as we indicated in essay two. States with comprehensive collective bargaining laws are more unionized than states without such laws. Essay three showed that the vague language or unclear intention of the law makers also opened the door for different interpretations of the laws depending on one's background or political party affiliations. Vague or inadequate labor laws may lead to more employer opposition. Labor laws should periodically be updated to meet the changes in a dynamic labor market such as the US labor market. As of this writing, most of the laws that govern the US labor markets are outdated and ripe for renewal. Most importantly, the laws that govern collective bargaining needs to be amended or changed. In 1978, the US Congress came very close to updating the NLRA; however, that effort was filibustered in the end. There is a similar bill under consideration "Employee Free Choice Act" that would amend the NLRA and would expedite union organizing drives and raise penalties for committing ULP.

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